Australian Government

CPC08 Construction, Plumbing and Services Training Package

Release 9.1

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

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BSBFIM501A Manage budgets and financial plans 7417
BSBHRM402A Recruit, select and induct staff 7426
BSBHRM509A Manage rehabilitation or return to work programs 7433
BSBINN301A Promote innovation in a team environment 7440
BSBINN502A Build and sustain an innovative work environment 7449
BSBITA401A Design databases 7458
BSBITS401B Maintain business technology 7466
BSBITU201A Produce simple word processed documents 7474
BSBITU202A Create and use spreadsheets 7483
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BSBLED502A Manage programs that promote personal effectiveness 7526
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BSBMGT502B Manage people performance 7541
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BSBOHS404B Contribute to the implementation of strategies to control OHS risk 7598
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BSBRSK501B Manage risk 7700
BSBSLS403A Present a sales solution 7707
BSBSLS404A Secure prospect commitment 7716
BSBSLS502A Lead and manage a sales team 7724
BSBSMB301A Investigate micro business opportunities 7731
BSBSMB401A Establish legal and risk management requirements of small business 7739
BSBSMB402A Plan small business finances 7748
BSBSMB404A Undertake small business planning 7756
BSBSMB405B Monitor and manage small business operations 7767
BSBSMB406A Manage small business finances 7774
BSBSMB407A Manage a small team 7782
BSBWOR401A Establish effective workplace relationships 7791
BSBWOR402A Promote team effectiveness 7800
BSBWOR501B Manage personal work priorities and professional development 7808
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CHCCOM403A Use targeted communication skills to build relationships 7831
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CPPDSM4022A Sell and finalise the sale of property by private treaty.....7850
CPPDSM5022A Implement asset management plan.....7866
CPPDSM6002A Conduct a property investment feasibility study 7878
CPPDSM6008A Develop strategic facilities management plan 7890
CPPFES2006A Prepare for installation and servicing operations.....7902
CPPFES2025A Inspect, test and maintain gaseous fire-suppression systems.....7916
CPPFES2043A Prevent ozone depleting substance and synthetic greenhouse gas emissions7934
CPPFES2047A Inspect and test control and indicating equipment.....7944
HLTFA211A Provide basic emergency life support.....7960
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ICAICT103A Use, communicate and search securely on the internet.....7983
ICAICT105A Operate spreadsheet applications.....7995
ICAICT201A Use computer operating systems and hardware 8003
ICAICT210A Operate database applications.....8011
LGAPLEM502A Apply ecologically sustainable development principles to the built environment.....8019
LMFFM3006B Install furnishing.....8021
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LMFFM3028B Fabricate synthetic solid surface products 8035
LMFFM3030B Set up, operate and maintain CNC sizing machines 8043
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LMFGG2008B Glaze/reglaze residential windows and doors 8067
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MEM05050B Perform routine gas metal arc welding.....8095
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RIIWMG203A Drain and dewater civil construction site 8187
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TLIB3013A Maintain mobile cranes.....8214
TLIB3015A Undertake site inspection.....8223
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TLIF2010A Apply fatigue management strategies.....8239
TLIF3084A Follow mobile crane safety procedures.....8246
TLILIC2005A Licence to operate a boom-type elevating work platform (boom length 11 metres or more) 8255
TLILIC2016A Licence to drive heavy rigid vehicle 8267
TLILIC3006A Licence to operate a non-slewing mobile crane (greater than 3 tonnes capacity) 8276
TLILIC3008A Licence to operate a slewing mobile crane (up to 20 tonnes) 8288
TLILIC4009A Licence to operate a slewing mobile crane (up to 60 tonnes) 8301
TLILIC4010A Licence to operate a slewing mobile crane (up to 100 tonnes) 8313
TLILIC4011A Licence to operate a slewing mobile crane (over 100 tonnes).....8325

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TLILIC2001A Licence to operate a forklift truck.....8338
CPPCMN2002A Participate in workplace safety arrangements 8347
UEENEEE101A Apply Occupational Health and Safety regulations, codes and practices in the workplace.....8354
UEENEEJ102A Prepare and connect refrigerant tubing and fittings.....8366
UEENEEJ105A Position, assemble and start up single head split air conditioning and water heating heat pump systems 8378
UEENEEJ172A Recover, pressure test, evacuate, charge and leak test refrigerants - split systems.....8393

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Modification History

The version details of this endorsed Training Package are in the table below.

9.1	5 August 2015	ISC upgrade for: • deletion of the following qualification from CPC08: • CPC50108 Diploma of Building Surveying • deletion CPC50108 Diploma of Building Surveying units

9	17 January 2014	**NSSC endorsement for the**:
		• addition of one new qualification:
		  • CPC41013 Certificate IV in Demolition
		• addition of seven revised non-equivalent qualifications:
		  • CPC30313 Certificate III in Concreting, based on superseded CPC30311
		  • CPC30413 Certificate III in Demolition, based on superseded CPC30411
		  • CPC32313 Certificate III in Stonemasonry (Monumental/Installation), based on superseded CPC32311
		  • CPC32413 Certificate III in Plumbing, based on superseded CPC32412
		  • CPC32513 Certificate III in Plumbing (Mechanical Services), based on superseded CPC32512
		  • CPC32713 Certificate III in Gas Fitting, based on superseded CPC32712
		  • CPC32813 Certificate III in Fire Protection, based on superseded CPC32812
		• addition of 16 revised non-equivalent and three new units of competency in the concreting sector:
		  • CPCCCO2021A Handle concreting materials
		  • CPCCCO2022A Use and maintain concreting plant, tools and equipment
		  • CPCCCO3035A Assess and specify concrete supply requirements
		  • CPCCCO3036A Plan concrete work and brief team
		  • CPCCCO3041A Place concrete
		  • CPCCCO3042A Finish concrete
		  • CPCCCO3043A Cure concrete
		  • CPCCCO3044A Carry out decorative finishes to concrete
		  • CPCCCO3046A Repair and rectify concrete
		  • CPCCCO3047A Cut and core concrete

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		• CPCCCO3048A Construct tilt panels on site • CPCCCO3049A Apply and finish sprayed concrete • CPCCCO3050A Carry out high performance concreting • CPCCCO3051A Conduct off-form vertical concrete operations • CPCCCO3052A Conduct concrete boom delivery operations • CPCCCO3053A Slump test concrete • CPCCCO3054A Operate concrete agitator trucks • CPCCCO3055A Install topping slabs • CPCCCO4001A Supervise concreting work • addition of one revised non-equivalent unit and 14 new units of competency in the demolition sector: • CPCCDE3016A Identify hazards on demolition sites and apply risk management strategies • CPCCDE3017A Select and use hand tools and equipment for demolition tasks • CPCCDE3018A Select and use small plant and equipment for demolition tasks • CPCCDE3019A Demolish small buildings and structures using hand tools and small plant and equipment • CPCCDE3020A Select and use tools and equipment for hot work in the demolition industry • CPCCDE3021A Operate demolition material crushing plants • CPCCDE3022A Manage demolition recyclable and waste materials using load shifting equipment • CPCCDE3023A Operate skid steer loaders at ground level on demolition sites • CPCCDE3024A Operate mobile plant on suspended floors on demolition sites • CPCCDE3025A Operate remote-controlled plant on demolition sites • CPCCDE3026A Operate excavators at ground level to demolish building elements • CPCCDE4001A Plan and prepare for activities on demolition sites • CPCCDE4002A Plan and supervise demolition work to minimise environmental and public health and safety impact • CPCCDE4003A Supervise individual activities on demolition sites • CPCCDE4004A Finalise demolition activities and

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		supervise property handover
		• addition of two revised non-equivalent and seven new stonemasonry units:
		  • CPCCST2006A Identify and use stone products
		  • CPCCST3015A Apply gilding to stone
		  • CPCCST3016A Build solid stonemasonry walls
		  • CPCCST3017A Construct stone arches
		  • CPCCST3018A Inlay lead to stone
		  • CPCCST3019A Lay stonemasonry stairs
		  • CPCCST3020A Produce reconstituted stone
		  • CPCCST3021A Renovate and restore stone work
		  • CPCCST3022A Carry out profile work
		• addition of four revised non-equivalent and three new units of competency in the fire services sector:
		  • CPCPFS3044A Install distribution and range pipes
		  • CPCPFS3045A Fit off sprinkler heads, controls and ancillary equipment
		  • CPCPFS3046A Test the integrity of water-based fire protection systems using pressure
		  • CPCPFS3047A Test and maintain automatic fire sprinklers
		  • CPCPFS3048A Install fixed fire pumpsets
		  • CPCPFS3049A Conduct preventive maintenance on fixed fire pumpsets
		  • CPCPFS4027A Commission fire sprinkler systems
		• addition of one revised non-equivalent gas services unit:
		  • CPCPGS3061A Install and commission Type A gas appliances (replacing CPCPGS3058A)
		• addition of four new sustainability units:
		  • CPCSUS4002A Use building science principles to construct energy efficient buildings
		  • CPCSUS4003A Maximise energy efficiency through applied trade skills
		  • CPCSUS5002A Develop action plans to retrofit existing buildings for energy efficiency
		  • CPCSUS5003A Manage energy efficient building methods and strategies
		• deletion from CPC08 of eight units of competency:
		  • CPCCCO3025A Resurface concrete
		  • CPCCDE2011A Use demolition tools and equipment
		  • CPCCDE3011A Carry out mechanical general demolition
		  • CPCCDE3013A Operate a crushing plant

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		• CPCCST2002A Identify and use stone products • CPCCST3005A Carry out profile work • CPCCST3008A Inlay lead to stone • CPCPGS3058A Install and commission Type A gas appliances. **ISC upgrade to**: • make minor revisions to the following seven qualifications, while maintaining their equivalence: • CPC20211 Certificate II in Construction Pathways • CPC31912 Certificate III in Joinery • CPC40110 Certificate IV in Building and Construction (Building) • CPC40508 IV in Building and Construction (Site Management) • CPC40912 Certificate IV in Plumbing and Services • CPC50210 Diploma of Building and Construction (Building) • CPC50612 Diploma of Hydraulic Services Design • minor editorial correction to CPC40912 Certificate IV in Plumbing and Services title • make minor revisions to the following units of competency to reflect industry requirements captured as part of the continuous improvement process, as well as other minor editorial changes, resulting in the following revised equivalent units: • CPCCJN2002B Prepare for off-site manufacturing process • CPCPGS4011C Design and size consumer gas installations • CPCPGS4023B Install, commission and service Type B gas appliances • make other minor editorial changes.
8	5 December 2012	**NSSC endorsement for the**: • addition of two new qualifications: • CPC31712 Certificate III in Post-Tensioning • CPC32912 Certificate III in Construction Crane Operations • deletion of four qualifications: • CPC20311 Certificate II in Steelfixing • CPC20411 Certificate II in Concreting • CPC20511 Certificate II in Stoneworking • CPC31711 Certificate III in Low Rise Structural Framing • replacement of one or more core units in the following 16 CPC08 qualifications, resulting in an upgrade to year code and non-equivalent status:

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		• CPC20112 Certificate II in Construction • CPC20712 Certificate II in Drainage • CPC20812 Certificate II in Metal Roofing and Cladding • CPC20912 Certificate II in Urban Irrigation • CPC30812 Certificate III in Roof Tiling • CPC31812 Certificate III in Shopfitting • CPC31912 Certificate III in Joinery • CPC32412 Certificate III in Plumbing • CPC32512 Certificate III in Plumbing (Mechanical Services) • CPC32612 Certificate III in Roof Plumbing • CPC32712 Certificate III in Gas Fitting • CPC32812 Certificate III in Fire Protection • CPC40912 Certificate IV in Plumbing and Services • CPC50412 Diploma of Plumbing and Services • CPC50612 Diploma of Hydraulic Services Design • CPC60212 Advanced Diploma of Building and Construction (Management) • review of currency of native and imported units in CPC08 qualifications, resulting in upgrade of all but one of the remaining qualifications but no change to year code given equivalent status • addition of four new units of competency: • CPCCSI3015A Produce airbrushed signage • CPCCSI3016A Produce digital signage using advanced software applications • CPCPGS3047A Install LPG systems in marine craft • CPCPWT3030A Install home fire sprinkler systems • replacement of three construction units with the following non-equivalent units: • CPCCBC6018A Manage processes for complying with legal obligations of a building or construction contractor • CPCCCM1016A Identify requirements for safe tilt-up work • CPCCSH3006A Apply finishes • revision of existing plumbing and services units of competency (CPCP) to reflect industry requirements and sustainability policy changes since their first release (see unit mapping table for list of units and their changes) • replacement of 132 plumbing and services units with the following non-equivalent units: • CPCPCM2039A Carry out interactive workplace communication

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		• CPCPCM2040A Read plans and calculate plumbing quantities • CPCPCM2041A Work effectively in the plumbing and services sector • CPCPCM2043A Carry out WHS requirements, which included embedding of asbestos awareness into this plumbing and services work health and safety unit (a core unit to most Certificate III level Plumbing and Fire Services units of competency), resulting in a code change to the unit • CPCPCM2045A Handle and store plumbing materials • CPCPCM2046A Use plumbing hand and power tools • CPCPCM2047A Carry out levelling • CPCPCM2048A Cut and join sheet metal • CPCPCM2049A Cut using oxy-LPG-acetylene equipment • CPCPCM2050A Mark out materials • CPCPCM2052A Weld using oxy-acetylene equipment • CPCPCM2053A Weld using manual metal arc welding equipment • CPCPCM2054A Carry out simple concreting and rendering • CPCPCM2055A Work safely on roofs • CPCPCM3021A Flash penetrations through roofs and walls • CPCPCM3022A Weld polyethylene and polypropylene pipes using fusion method • CPCPCM3023A Fabricate and install non-ferrous pressure piping • CPCPCM4011A Carry out work-based risk control processes • CPCPCM4012A Estimate and cost work • CPCPCM4013A Produce 2-D architectural drawings using CAD software • CPCPCM4014A Prepare simple sketches and drawings • CPCPCM5010A Design complex sanitary plumbing and drainage systems • CPCPCM5011A Design complex cold water systems • CPCPCM5012A Design complex stormwater and roof drainage systems • CPCPCM5013A Design complex (non-solar) heated water systems • CPCPCM5014A Design sewer infrastructure systems • CPCPDR2021A Locate and clear blockages • CPCPDR2022A Install domestic treatment plants

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		• CPCPDR2023A Maintain effluent disinfection systems • CPCPDR2024A Install stormwater and sub-soil drainage systems • CPCPDR2025A Drain work site • CPCPDR2026A Install prefabricated inspection openings and enclosures • CPCPDR3021A Plan layout of a residential sanitary drainage system • CPCPDR3022A Install below ground sanitary drainage systems • CPCPDR3023A Install on-site disposal systems • CPCPFS2021A Connect static storage tanks for fixed fire protection systems • CPCPFS2022A Install portable fire equipment • CPCPFS3030A Design pre-calculated fire sprinkler systems • CPCPFS3031A Fabricate and install fire hydrant and hose reel systems • CPCPFS3032A Install distribution and range pipes • CPCPFS3033A Fit off sprinkler heads, controls and ancillary equipment • CPCPFS3034A Install control valve assemblies, actuating devices and local alarms • CPCPFS3035A Test fire protection systems for pressure • CPCPFS3036A Install special hazard systems • CPCPFS3037A Install domestic and residential life safety sprinkler systems • CPCPFS3038A Test and maintain fire hydrant and hose reel installations • CPCPFS3039A Test and maintain automatic fire sprinklers • CPCPFS3040A Conduct basic functional testing of water-based fire-suppression systems • CPCPFS3041A Inspect and test fire pumpsets • CPCPFS3042A Conduct annual functional testing of complex water-based fire-suppression systems • CPCPFS3043A Conduct functional water flow testing • CPCPFS4021A Commission domestic and residential fire suppression sprinkler systems • CPCPFS4022A Commission and maintain special hazard fire suppression systems • CPCPFS4023A Commission fire system pumpsets • CPCPFS4024A Design residential and domestic fire

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		sprinkler systems • CPCPFS4025A Commission fire alarm and detection system interface devices • CPCPFS4026A Commission firefighting appliances • CPCPFS5010A Design fire-compliant hydraulic services • CPCPFS5011A Design fire sprinkler systems • CPCPFS5012A Design fire hydrant and hose reel systems • CPCPGS3046A Install LPG systems in caravans, mobile homes and mobile workplaces • CPCPGS3048A Install gas pressure control equipment • CPCPGS3049A Install Type A gas appliance flues • CPCPGS3050A Install Type B gas appliance flues • CPCPGS3051A Purge consumer piping • CPCPGS3052A Maintain Type A gas appliances • CPCPGS3053A Disconnect and reconnect Type A gas appliances • CPCPGS3054A Calculate and install natural ventilation for Type A gas appliances • CPCPGS3055A Install gas sub-meters • CPCPGS3056A Install gas piping systems • CPCPGS3057A Size consumer gas piping systems • CPCPGS3058A Install and commission Type A gas appliances • CPCPGS3059A Install LPG storage of aggregate storage capacity up to 500 litres • CPCPGS3060A Install LPG storage of aggregate storage capacity exceeding 500 litres and less than 8KL • CPCPGS4022A Service Type A gas appliances • CPCPGS4023A Install, commission and service Type B gas appliances • CPCPIG2021A Design domestic urban irrigation systems • CPCPIG3021A Set out, install and commission irrigation systems • CPCPIG3022A Install and commission domestic irrigation pumps • CPCPMS2021A Assemble mechanical services components • CPCPMS3031A Fabricate and install steel pressure piping • CPCPMS3032A Select and fit insulation and sheathing • CPCPMS3033A Install small bore heating systems • CPCPMS3034A Install medical gas pipeline systems

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		• CPCPMS3035A Install and test ducting systems • CPCPMS3036A Install air handling units • CPCPMS3037A Install and test split system air conditioning • CPCPMS3038A Install air conditioning control equipment • CPCPMS3039A Maintain mechanical services equipment • CPCPMS3040A Install and maintain evaporative air cooling systems • CPCPMS3041A Install domestic solid fuel burning appliances • CPCPMS4022A Commission air and water systems • CPCPMS4023A Design compressed air systems • CPCPMS5010A Design steam generation and distribution systems • CPCPMS5011A Design air conditioning and ventilation systems • CPCPMS5012A Design sound attenuated hydraulic services • CPCPMS5013A Design hydronic heating and cooling systems • CPCPPS5023A Design solar water heating systems • CPCPPS5024A Conduct a water audit and identify water-saving initiatives • CPCPPS5025A Design grey water re-use systems • CPCPPS5026A Design rainwater collection, storage, distribution and re-use systems • CPCPPS5027A Design irrigation systems • CPCPPS5028A Design trade waste pre-treatment systems • CPCPPS5030A Design pump systems • CPCPPS5032A Design siphonic stormwater drainage systems • CPCPPS5033A Design vacuum sewerage systems • CPCPRF2022A Select and install roof sheeting and wall cladding • CPCPRF2023A Collect and store roof water • CPCPRF2024A Fabricate roof coverings for curved structures • CPCPRF3021A Receive roofing materials • CPCPRF3022A Fabricate and install roof drainage components • CPCPRF3023A Fabricate and install external flashings • CPCPRF3024A Install roof components

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		• CPCPRF3025A Install roof coverings to curved roof structures • CPCPRF3026A Install composite roof systems • CPCPSN3022A Install discharge pipes • CPCPSN3023A Fabricate and install sanitary stacks • CPCPSN3024A Install and fit off sanitary fixtures • CPCPSN3025A Install pre-treatment facilities • CPCPSN3026A Install sewerage pumpsets • CPCPWT3020A Connect and install storage tanks to a domestic water supply • CPCPWT3021A Set out and install water services • CPCPWT3022A Install and adjust water service controls and devices • CPCPWT3023A Install and commission water heating systems • CPCPWT3024A Install and maintain domestic water treatment equipment • CPCPWT3025A Install water pumpsets • CPCPWT3026A Fit off and commission heated and cold water services • CPCPWT3027A Connect irrigation systems from drinking water supply • CPCPWT3028A Install water service • CPCPWT3029A Install water pipe systems • CPCPWT4022A Commission and maintain backflow prevention devices • CPCPWT4023A Commission and maintain hot and heated water temperature control devices • deletion of two native CPC08 units of competency: • CPCPCM2011A Apply first aid in the workplace (replaced with HLTFA211A Provide basic emergency life support) • CPCPGS3017A Install gas detection devices. **ISC upgrade to**: • make minor revisions to the following qualifications, while maintaining their equivalence: • CPC1011: addition of unit to elective pool • CPC20211: changed packaging rules to increase qualification's flexibility • CPC30711: addition of unit to elective pool • CPC32111: addition of units to elective pool • CPC40611: addition of units to elective pool

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		• replace reference to the Building Code of Australia and Plumbing Code of Australia with the National Construction Code in those units new or revised in this version upgrade
		• replace reference to 'OHS' with 'WHS' in plumbing and services units (except PSFS units) and qualifications
		• include reference to photovoltaic (solar) panels in a number of construction and plumbing and services units (see unit mapping table)
		• reformat skill items in required skills section of plumbing and services units (except PSFS units) to present standardised approach to skill grouping
		• provide advice to users regarding licensing, legislative, regulatory and certification requirements in all plumbing and services units
		• enhance user awareness of the need to consider unit prerequisite requirements when selecting units of competency by including a statement to that effect in the packaging rules of all qualifications
		• make minor content changes to CPCCBC4012B, CPCCBC5007B, CPCCBC6001B, CPCCCA2002B, CPCCCA3005B, CPCCCA3006B, CPCCCA3007C, CPCCCA3008B, CPCCCA3009B, CPCCCA3017B, CPCCCM2005B, CPCCCM2006B, CPCCCM2007B, CPCCCM2008B, CPCCCM2010B,CPCCCM3001C, CPCCPB3026B, CPCCPD3030B, CPCCRT3003B, CPCCRT3004B, CPCCRT3005B, CPCCRT3006B, and CPCCVE1002B without altering equivalence, resulting in a version upgrade
		• make minor editorial changes to CPCPDR4011B, CPCPDR4012B, CPCPDR4013B, CPCPGS4011B, CPCPMS4011B, CPCPPS5000B, CPCPPS5001B, CPCPPS5002B, CPCPPS5009B, CPCPPS5011B, CPCPPS5015B, CPCPRF4011B, CPCPSN3011B, CPCPSN4011B, and CPCPWT4011B without altering equivalence, resulting in a version upgrade
		• make minor editorial changes to the unit mapping tables of:
		  • Version 7 unit mapping entry for CPCCBC5014A, which did not replace CPCCBC4023A
		  • Version 6 unit mapping added missing entry relating to replacement of CPCPWT4003A with CPCPWT4013A
		• revise skill set 'Manage complex building projects':
		• add CPCCBC5001B Apply building codes and standards to the construction process for medium rise building projects to skill set requirement (prerequisite to CPCCBC5018A) to address its previous omission from the packaging rules, thereby increasing skill set requirement from three to four units

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		• update units to current equivalent version • update skill set 'Undertake trade contracting' with current equivalent version of native and imported units • made other minor editorial changes.
7	29 November 2011	NSSC endorsement for the: • addition of four new units of competency: • CPCCDE3014A Remove non-friable asbestos • CPCCDE3015A Remove friable asbestos • CPCCBC4051A Supervise asbestos removal • CPCCBC5014A Conduct asbestos assessment associated with removal • addition of a new, or replacement of an old, asbestos unit of competency in the elective pool of the following qualifications, as well as the further addition of the associated prerequisite unit (CPCCOHS1001A Work safely in the construction industry): • CPC30411 Certificate III in Demolition • CPC40110 Certificate IV in Building and Construction (Building) • CPC40308 Certificate IV in Building and Construction (Estimating) • CPC40508 Certificate IV in Building and Construction (Site Management) • CPC40611 Certificate IV in Building and Construction (Specialist Trades) • CPC40708 Certificate IV in Building and Construction (Trade Contracting) • CPC40808 Certificate IV in Swimming Pool and Spa Building • CPC50210 Diploma of Building and Construction (Building) • deletion from CPC08 of two units of competency packaged as elective units: • CPCCDE3012A Encapsulate and remove asbestos • CPCCBC4023A Plan and undertake site inspection and assessment of asbestos products and materials.

6.1	8 June 2011	ISC upgrade: • Removal of erroneous listing in the elective pool of CPC32711 Certificate III in Gas Fitting of the unit CPCPCM2032A Weld using oxy-acetylene equipment; relocating it to its originally intended core pool location in that qualification.

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		• Re-coding of the following five units in response to stakeholder implementation advice with regard to the use of previous version unit codes: • CPCPGS3031A Install gas piping systems • CPCPGS3032A Size consumer gas piping systems • CPCPGS3033A Install and commission Type A gas appliances • CPCPGS3034A Install LPG storage of aggregate storage capacity up to 500 litres • CPCPGS3035A Install LPG storage of aggregate storage capacity exceeding 500 litres and less than 8KL. • Adjustment of CPC32411 Certificate III in Plumbing, CPC32511 Certificate III in Plumbing (Mechanical Services) and CPC32711 Certificate III in Gas Fitting to reflect above re-coding of five units. • Typographical changes made to ensure that unit codes for CPCPCM2028A Cut and join sheet metal, CPCPCM2029A Cut using oxy-LPG-acetylene equipment and CPCPCM2032A Weld using oxy-acetylene equipment were uniformly correctly cited. • Other minor typographical corrections, including minor change to title of unit CPCPWT3016A in qualification packaging rules.
6	19 May 2011	Renaming CPC08 to Construction, Plumbing and Services Training Package in the interests of simplifying Applying consistent use of AQF level 2 occupational health and safety unit as a prerequisite requirement for units in Certificates II and III construction qualifications Removing the level 1 occupational health and safety unit as a prerequisite requirement in a range of construction qualifications Repackaging construction qualifications to incorporate prerequisite unit requirements Transferring non-high risk licensing units in construction qualifications from the core to the elective pool where a high risk licensing unit was already in the core Clarification of the packaging rules in CPC31011 Certificate III in Solid Plastering to confirm the requirement to complete 5 elective units Repackaging CPC32011 Certificate III in Carpentry and Joinery to meet industry requirements Embedding sustainability into core construction units of competency where appropriate Removing imported units with prerequisite chains from

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		construction qualifications Updating imported units with most recent version in construction qualifications Recoding units and qualifications as a result of implementing the above changes for construction qualifications (as detailed in qualification mapping table) Reformatting for the purposes of clarity the information relating to the communications employability skill in the Employability Skills Qualification Summary for all Certificates I to III construction qualifications Making minor corrections to some unit mapping information in CPC08 Version 1 unit mapping table of BCG03 General Construction to CPC08 Version 1 Amending packaging rules in construction qualifications not used for licensing, regulation or traditional trades to comply with NQC flexibility requirements Removing most prerequisite requirements (other than the OHS units) from all plumbing and services units from Certificates II to IV Repackaging the following plumbing qualifications to meet industry requirements: • CPC32411 Certificate III in Plumbing: adding a new unit to the core to meet changing market demand and regulatory requirements • CPC32511 Certificate III in Plumbing (Mechanical Services): removing a unit from the core and endorsing a new unit in the elective pool • CPC32811 Certificate III in Fire Protection: adding new elective units and increasing the overall size of the qualification to meet industry and regulatory requirements Adding six new plumbing and services units of competency: • CPCPFS3020A Conduct basic functional testing of water-based fire-suppression systems • CPCPFS3021A Inspect and test fire pumpsets • CPCPFS3022A Conduct annual functional testing of complex water-based fire-suppression systems • CPCPFS3023A Conduct functional water flow testing • CPCPMS3021A Install domestic solid fuel burning appliances • CPCPWT3010A Connect and install storage tanks to a domestic water supply Embedding sustainability into plumbing and services units of competency

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		Removing imported units with prerequisite chains from plumbing and services qualifications Updating imported units with most recent version in plumbing and services qualifications Recoding units and qualifications as a result of implementing the above changes for plumbing and services qualifications (as detailed in qualification mapping table) Reformatting for the purposes of clarity the information relating to the communications employability skill in the Employability Skills Qualification Summary for all Certificates II and III plumbing and services qualifications Making minor corrections to some unit mapping information in CPC08 Version 1 unit mapping table of BCP03 Plumbing and Services Training Packages to CPC08 Version 1 Amending packaging rules in plumbing and services qualifications not used for licensing, regulation or traditional trades to comply with NQC flexibility requirements Adding or correcting content in CPC08 units and qualifications to address industry requirements or correct editorial inconsistencies as follows: unit descriptors, application of the units, range statements, and qualification employability skill summaries where information was omitted or not uploaded onto NTIS

5	2 March 2010	Change to elective pool of one existing qualification: • CPC31208 Certificate III in Wall and Ceiling Lining: addition of new general elective unit CPCCPB3027A Install ceiling insulation to packaging rules.
		Addition of one new unit of competency: • CPCCPB3027A Install ceiling insulation to address critical safety requirements in installing ceiling insulation.

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4	1 March 2010	Changes to packaging rules of three existing qualifications: • CPC40110 Certificate IV in Building and Construction (Building): packaging rules changed to total of 16 units, consisting of 13 core and 3 elective units • CPC50210 Diploma of Building and Construction (Building): • packaging rules changed to total of 18 units, consisting of 13 core and 5 elective units • options for choice of elective units amended and extended • CPC50308 Diploma of Building and Construction (Management): • two elective units changed to reflect changes detailed immediately below (CPCCBC5001A to CPCCBC5001B; and CPCCBC5008A to CPCCBC5018A).
		Changes to two units of competency: • amended content of CPCCBC5001B Apply building codes and standards to the construction process for medium rise building projects to remove duplication with other units in the Diploma qualification • deleted unit of competency (CPCCBC5008A Apply structural principles to the construction of medium rise buildings) replaced by added new unit CPCCBC5018A Apply structural principles to the construction of medium rise buildings, now with a prerequisite requirement.
3	20 October 2009	Addition of new specialist stream for hydraulic services design to CPC40909 Certificate IV in Plumbing and Services. Addition of new hydraulic services design qualification CPC50609 Diploma of Hydraulic Services Design.
2	22 July 2009	Addition of two new fire systems design qualifications: • CPC50509 Diploma of Fire Systems Design • CPC70109 Vocational Graduate Certificate in Fire Systems Design Management. Addition of 18 new fire systems design units of competency. Addition of one imported unit (BSBAUD504B to CPC50509).
1	February 2009	Primary release. CPC08 brings together the qualifications and units of competency from three previous Training Packages: • BCG03 General Construction • BCF00 Off-Site Construction • BCP03 Plumbing and Services.

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Imprint Page

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Preliminary information

Important note to users

Training Packages are not static documents; they are amended periodically to reflect the latest industry practices and are version controlled. It is essential that the latest version is always used.

Check the version number before commencing training or assessment

This Training Package is Version 9.1 – check whether this is the latest version by going to the National Training Information Service (**www.ntis.gov.au**) and locating information about the Training Package. Alternatively, contact Construction and Property Services Industry Skills Council at www.cpsisc.com.au (www.cpsisc.com.au) to confirm the latest version number.

Explanation of version number conventions

The primary release Training Package is Version 1. When changes are made to a Training Package, sometimes the version number is changed and sometimes it is not, depending on the extent of the change. A significant change would mean assigning the version identifier 'Version 2' to the Training Package.
When a Training Package is reviewed it is considered to be a new Training Package for the purposes of version control (i.e. a new year identifier in the code is added, for example TDT02 becomes TDT07), then it is called Version 1.
Do not confuse the version number with the Training Package's national code (which remains the same during its period of endorsement).

Explanation of the review date

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

CPC08 sectors and functional areas

CPC08 units of competency		
Sector	**Functional area**	**Unit code identifier**
Common	Management	MCM
	Sustainability	SUS

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Construction	Building and construction	CBC
	Brick and blocklaying	CBL
	Carpentry	CCA
	Common	CCM
	Concreting	CCO
	Demolition	CDE
	Dogging	CDO
	Joinery	CJN
	Stairbuilding	CJS
	High risk licensing	CL
	Occupational health and safety	COHS
	Segmental paving	CPA
	Plasterboard	CPB
	Painting and decorating	CPD
	Rigging	CRI
	Roof tiling	CRT
	Scaffolding	CSC
	Steelfixing	CSF
	Shopfitting	CSH
	Signage	CSI
	Plastering	CSP
	Stonemasonry	CST
	Surveying	CSV
	Vocational entry	CVE
	Wall and ceiling lining	CWC

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	Wall and floor tiling	CWF
	Waterproofing	CWP
Plumbing and services	Common	PCM
	Drainage	PDR
	Fire services	PFS
	Fire system design	SFS
	Gas services	PGS
	Irrigation	PIG
	Mechanical services	PMS
	Plumbing services	PPS
	Roofing	PRF
	Sanitary	PSN
	Water	PWT

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AQF qualifications in CPC08

Qualifications in CPC08v9.1

Qualifications in CPC08v9.1	
Code	Title
CPC10111	Certificate I in Construction
CPC20112	Certificate II in Construction
CPC20211	Certificate II in Construction Pathways
CPC20712	Certificate II in Drainage
CPC20812	Certificate II in Metal Roofing and Cladding
CPC20912	Certificate II in Urban Irrigation
CPC30111	Certificate III in Bricklaying/Blocklaying
CPC30211	Certificate III in Carpentry
CPC30313	Certificate III in Concreting
CPC30413	Certificate III in Demolition
CPC30511	Certificate III in Dogging
CPC30611	Certificate III in Painting and Decorating
CPC30711	Certificate III in Rigging
CPC30812	Certificate III in Roof Tiling
CPC30911	Certificate III in Scaffolding
CPC31011	Certificate III in Solid Plastering
CPC31111	Certificate III in Steelfixing
CPC31211	Certificate III in Wall and Ceiling Lining

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CPC31311	Certificate III in Wall and Floor Tiling
CPC31411	Certificate III in Construction Waterproofing
CPC31511	Certificate III in Formwork/Falsework
CPC31611	Certificate III in Paving
CPC31712	Certificate III in Post-Tensioning
CPC31812	Certificate III in Shopfitting
CPC31912	Certificate III in Joinery
CPC32011	Certificate III in Carpentry and Joinery
CPC32111	Certificate III in Signage
CPC32211	Certificate III in Joinery (Stairs)
CPC32313	Certificate III in Stonemasonry (Monumental/Installation)
CPC32413	Certificate III in Plumbing
CPC32513	Certificate III in Plumbing (Mechanical Services)
CPC32612	Certificate III in Roof Plumbing
CPC32713	Certificate III in Gas Fitting
CPC32813	Certificate III in Fire Protection
CPC32912	Certificate III in Construction Crane Operations
CPC40110	Certificate IV in Building and Construction (Building)
CPC40208	Certificate IV in Building and Construction (Contract Administration)
CPC40308	Certificate IV in Building and Construction (Estimating)
CPC40408	Certificate IV in Building and Construction (Sales)
CPC40508	Certificate IV in Building and Construction (Site Management)
CPC40611	Certificate IV in Building and Construction (Specialist Trades)
CPC40708	Certificate IV in Building and Construction (Trade Contracting)
CPC40808	Certificate IV in Swimming Pool and Spa Building

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CPC40912	Certificate IV in Plumbing and Services
CPC41013	Certificate IV in Demolition
CPC50210	Diploma of Building and Construction (Building)
CPC50308	Diploma of Building and Construction (Management)
CPC50412	Diploma of Plumbing and Services
CPC50509	Diploma of Fire Systems Design
CPC50612	Diploma of Hydraulic Services Design
CPC60108	Advanced Diploma of Building Surveying
CPC60212	Advanced Diploma of Building and Construction (Management)
CPC70109	Vocational Graduate Certificate in Fire Systems Design Management

The following qualifications in CPP07 Property Services Training Package also have close relationships with the construction, plumbing and services industry.

Qualifications in CPC08v9

Qualifications in CPC08v9	
Code	**Title**
CPC10111	Certificate I in Construction
CPC20112	Certificate II in Construction
CPC20211	Certificate II in Construction Pathways
CPC20712	Certificate II in Drainage
CPC20812	Certificate II in Metal Roofing and Cladding
CPC20912	Certificate II in Urban Irrigation
CPC30111	Certificate III in Bricklaying/Blocklaying
CPC30211	Certificate III in Carpentry

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CPC30313	Certificate III in Concreting
CPC30413	Certificate III in Demolition
CPC30511	Certificate III in Dogging
CPC30611	Certificate III in Painting and Decorating
CPC30711	Certificate III in Rigging
CPC30812	Certificate III in Roof Tiling
CPC30911	Certificate III in Scaffolding
CPC31011	Certificate III in Solid Plastering
CPC31111	Certificate III in Steelfixing
CPC31211	Certificate III in Wall and Ceiling Lining
CPC31311	Certificate III in Wall and Floor Tiling
CPC31411	Certificate III in Construction Waterproofing
CPC31511	Certificate III in Formwork/Falsework
CPC31611	Certificate III in Paving
CPC31712	Certificate III in Post-Tensioning
CPC31812	Certificate III in Shopfitting
CPC31912	Certificate III in Joinery
CPC32011	Certificate III in Carpentry and Joinery
CPC32111	Certificate III in Signage
CPC32211	Certificate III in Joinery (Stairs)
CPC32313	Certificate III in Stonemasonry (Monumental/Installation)
CPC32413	Certificate III in Plumbing
CPC32513	Certificate III in Plumbing (Mechanical Services)
CPC32612	Certificate III in Roof Plumbing
CPC32713	Certificate III in Gas Fitting

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CPC32813	Certificate III in Fire Protection
CPC32912	Certificate III in Construction Crane Operations
CPC40110	Certificate IV in Building and Construction (Building)
CPC40208	Certificate IV in Building and Construction (Contract Administration)
CPC40308	Certificate IV in Building and Construction (Estimating)
CPC40408	Certificate IV in Building and Construction (Sales)
CPC40508	Certificate IV in Building and Construction (Site Management)
CPC40611	Certificate IV in Building and Construction (Specialist Trades)
CPC40708	Certificate IV in Building and Construction (Trade Contracting)
CPC40808	Certificate IV in Swimming Pool and Spa Building
CPC40912	Certificate IV in Plumbing and Services
CPC41013	Certificate IV in Demolition
CPC50108	Diploma of Building Surveying
CPC50210	Diploma of Building and Construction (Building)
CPC50308	Diploma of Building and Construction (Management)
CPC50412	Diploma of Plumbing and Services
CPC50509	Diploma of Fire Systems Design
CPC50612	Diploma of Hydraulic Services Design
CPC60108	Advanced Diploma of Building Surveying
CPC60212	Advanced Diploma of Building and Construction (Management)
CPC70109	Vocational Graduate Certificate in Fire Systems Design Management

The following qualifications in CPP07 Property Services Training Package also have close relationships with the construction, plumbing and services industry.

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Qualifications in CPP07

Code	Title
CPP20112	Certificate II in Surveying and Spatial Information Services
CPP20511	Certificate II in Fire Protection Inspection and Testing
CPP30112	Certificate III in Surveying and Spatial Information Services
CPP30811	Certificate III in Fire Protection Inspection and Testing
CPP40112	Certificate IV in Surveying
CPP40212	Certificate IV in Spatial Information Services
CPP40811	Certificate IV in Access Consulting
CPP41212	Certificate IV in NatHERS Assessment
CPP50112	Diploma of Surveying
CPP50212	Diploma of Spatial Information Services
CPP50711	Diploma of Access Consulting
CPP50911	Diploma of Building Design
CPP51012	Diploma of Residential Building Energy Assessment
CPP60112	Advanced Diploma of Spatial Information Services
CPP60312	Advanced Diploma of Surveying
CPP80113	Graduate Certificate in Building Design
CPP80213	Graduate Diploma of Building Design
CPP80313	Graduate Diploma of Access Consulting

CPC08 native units of competency

CPCCBC - CPCCLTC

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Code	Title
CPCCBC4001A	Apply building codes and standards to the construction process for low rise building projects
CPCCBC4002A	Manage occupational health and safety in the building and construction workplace
CPCCBC4003A	Select and prepare a construction contract
CPCCBC4004A	Identify and produce estimated costs for building and construction projects
CPCCBC4005A	Produce labour and material schedules for ordering
CPCCBC4006B	Select, procure and store construction materials for low rise projects
CPCCBC4007A	Plan building or construction work
CPCCBC4008B	Conduct on-site supervision of building and construction projects
CPCCBC4009B	Apply legal requirements to building and construction projects
CPCCBC4010B	Apply structural principles to residential low rise constructions
CPCCBC4011B	Apply structural principles to commercial low rise constructions
CPCCBC4012B	Read and interpret plans and specifications
CPCCBC4013A	Prepare and evaluate tender documentation
CPCCBC4014A	Prepare simple building sketches and drawings
CPCCBC4015A	Prepare specifications for all construction works
CPCCBC4016A	Administer a construction contract
CPCCBC4017A	Arrange resources and prepare for the building or construction project
CPCCBC4018A	Apply site surveys and set-out procedures to building and construction projects
CPCCBC4019A	Apply sustainable building design principles to water management systems
CPCCBC4020A	Build thermally efficient and sustainable structures

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Code	Title
CPCCBC4021A	Minimise waste on the building and construction site
CPCCBC4022A	Supervise tilt-up work
CPCCBC4024A	Resolve business disputes
CPCCBC4025A	Manage personal work priorities and professional development
CPCCBC4026A	Arrange building applications and approvals
CPCCBC4027B	Establish a basis for sales consulting
CPCCBC4028A	Prepare design brief for construction works
CPCCBC4029B	Apply construction information to the sales process
CPCCBC4030A	Analyse and communicate industry information
CPCCBC4031A	Process client requirements
CPCCBC4032A	Apply contract law to sales processes
CPCCBC4033A	Maintain the sales environment
CPCCBC4034A	Apply codes and standards to building trade and services contracting
CPCCBC4035A	Initiate the heritage works process
CPCCBC4036A	Prepare to undertake the heritage restoration process
CPCCBC4037A	Prepare drawings for heritage works
CPCCBC4038A	Prepare work plans for restoration work
CPCCBC4039A	Undertake the heritage restoration process
CPCCBC4040A	Prepare report for heritage restoration work
CPCCBC4041A	Undertake preparations for refractory work
CPCCBC4042A	Construct a fire brick wall and arch using refractory materials
CPCCBC4043A	Operate a self-erecting tower crane
CPCCBC4044A	Operate a tower crane

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Code	Title
CPCCBC4045A	Perform advanced rigging
CPCCBC4046A	Erect and dismantle advanced scaffolding
CPCCBC4047A	Quality assure fire-rated lining systems
CPCCBC4048A	Apply building codes and standards to the construction process for swimming pools and spas
CPCCBC4049A	Apply structural principles to construction of swimming pools and spas
CPCCBC4050A	Select, procure and store construction materials for swimming pools and spa projects
CPCCBC4051A	Supervise asbestos removal
CPCCBC5001B	Apply building codes and standards to the construction process for medium rise building projects
CPCCBC5002A	Monitor costing systems on medium rise building and construction projects
CPCCBC5003A	Supervise the planning of on-site medium rise building or construction work
CPCCBC5004A	Supervise and apply quality standards to the selection of building and construction materials
CPCCBC5005A	Select and manage building and construction contractors
CPCCBC5006B	Apply site surveys and set-out procedures to medium rise building projects
CPCCBC5007B	Administer the legal obligations of a building or construction contractor
CPCCBC5009A	Identify services layout and connection methods to medium rise construction projects
CPCCBC5010B	Manage construction work
CPCCBC5011A	Manage environmental management practices and processes in building and construction
CPCCBC5012A	Manage the application and monitoring of energy conservation and management practices and processes

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Code	Title
CPCCBC5013A	Develop professional technical and legal reports on building and construction projects
CPCCBC5014A	Conduct asbestos assessment associated with removal
CPCCBC5018A	Apply structural principles to the construction of medium rise buildings
CPCCBC6001B	Apply building codes and standards to the construction process for large building projects
CPCCBC6002A	Generate and direct the development of new projects
CPCCBC6003A	Establish, maintain and review contract administration procedures and frameworks
CPCCBC6005A	Manage tender developments for major projects
CPCCBC6006A	Manage the procurement and acquisition of resources for building or construction projects
CPCCBC6007A	Develop, plan and implement appropriate building or construction environmental management practices and processes
CPCCBC6008A	Develop and implement an appropriate estimating and tendering system
CPCCBC6009A	Develop, plan and implement an appropriate building or construction planning process
CPCCBC6010A	Plan, develop and implement building or construction energy conservation and management practices and processes
CPCCBC6011A	Establish systems to develop and monitor building and construction costs
CPCCBC6012A	Manage and administer development of documentation for building or construction projects
CPCCBC6013A	Evaluate materials for multi-storey buildings
CPCCBC6014A	Apply structural principles to the construction of large, high rise and complex buildings
CPCCBC6015A	Apply building surveying procedures

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Code	Title
CPCCBC6016A	Assess construction faults in large building projects
CPCCBC6017A	Evaluate services layout and connection methods for the planning of large building projects
CPCCBC6018A	Manage processes for complying with legal obligations of a building or construction contractor
CPCCBL2001A	Handle and prepare bricklaying and blocklaying materials
CPCCBL2002A	Use bricklaying and blocklaying tools and equipment
CPCCBL3001A	Lay paving
CPCCBL3002A	Carry out masonry veneer construction
CPCCBL3003A	Carry out cavity brick construction
CPCCBL3004A	Construct masonry steps and stairs
CPCCBL3005A	Lay masonry walls and corners
CPCCBL3006A	Lay multi-thickness walls and piers
CPCCBL3007A	Install glass blockwork
CPCCBL3009A	Install flashings and damp proof course
CPCCBL3010A	Construct masonry arches
CPCCBL3011A	Construct curved walls
CPCCBL3012A	Construct fireplaces and chimneys
CPCCBL3013A	Construct masonry structural systems
CPCCBL3014A	Install fire-rated masonry construction
CPCCBL3015A	Construct decorative brickwork
CPCCBL3016A	Construct battered masonry walls and piers
CPCCBL3017A	Carry out tuck pointing to brickwork
CPCCBL3018A	Install aerated autoclaved concrete products
CPCCCA2002B	Use carpentry tools and equipment

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Code	Title
CPCCCA2003A	Erect and dismantle formwork for footings and slabs on ground
CPCCCA2011A	Handle carpentry materials
CPCCCA3001A	Carry out general demolition of minor building structures
CPCCCA3002A	Carry out setting out
CPCCCA3003A	Install flooring systems
CPCCCA3004A	Construct wall frames
CPCCCA3005B	Construct ceiling frames
CPCCCA3006B	Erect roof trusses
CPCCCA3007C	Construct pitched roofs
CPCCCA3008B	Construct eaves
CPCCCA3009B	Construct advanced roofs
CPCCCA3010A	Install and replace windows and doors
CPCCCA3011A	Refurbish timber sashes to window frames
CPCCCA3012A	Frame and fit wet area fixtures
CPCCCA3013A	Install lining, panelling and moulding
CPCCCA3014A	Construct bulkheads
CPCCCA3015A	Assemble partitions
CPCCCA3016A	Construct timber external stairs
CPCCCA3017B	Install exterior cladding
CPCCCA3018A	Construct, erect and dismantle formwork for stairs and ramps
CPCCCA3019A	Erect and dismantle formwork to suspended slabs, columns, beams and walls
CPCCCA3020A	Erect and dismantle jump form formwork
CPCCCA3021A	Erect and dismantle slip form formwork

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Code	Title
CPCCCA3022A	Install curtain walling
CPCCCA3023A	Carry out levelling operations
CPCCCM1011A	Undertake basic estimation and costing
CPCCCM1012A	Work effectively and sustainably in the construction industry
CPCCCM1013A	Plan and organise work
CPCCCM1014A	Conduct workplace communication
CPCCCM1015A	Carry out measurements and calculations
CPCCCM1016A	Identify requirements for safe tilt-up work
CPCCCM2001A	Read and interpret plans and specifications
CPCCCM2002A	Carry out excavation
CPCCCM2003B	Calculate and cost construction work
CPCCCM2004A	Handle construction materials
CPCCCM2005B	Use construction tools and equipment
CPCCCM2006A	Apply basic levelling procedures
CPCCCM2006B	Apply basic levelling procedures
CPCCCM2007B	Use explosive power tools
CPCCCM2008A	Erect and dismantle restricted height scaffolding
CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCCCM2009A	Carry out basic demolition
CPCCCM2010B	Work safely at heights
CPCCCM3001C	Operate elevated work platforms
CPCCCM3002A	Operate a truck mounted loading crane
CPCCCM3003A	Work safely around power sources, services and assets
CPCCCO2013A	Carry out concreting to simple forms

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Code	Title
CPCCCO2014A	Carry out concrete work
CPCCCO2021A	Handle concreting materials
CPCCCO2022A	Use and maintain concreting plant, tools and equipment
CPCCCO3026A	Carry out repair and rectification of concrete
CPCCCO3035A	Assess and specify concrete supply requirements
CPCCCO3036A	Plan concrete work and brief team
CPCCCO3041A	Place concrete
CPCCCO3042A	Finish concrete
CPCCCO3043A	Cure concrete
CPCCCO3044A	Carry out decorative finishes to concrete
CPCCCO3046A	Repair and rectify concrete
CPCCCO3047A	Cut and core concrete
CPCCCO3048A	Construct tilt panels on site
CPCCCO3049A	Apply and finish sprayed concrete
CPCCCO3050A	Carry out high performance concreting
CPCCCO3051A	Conduct off-form vertical concrete operations
CPCCCO3052A	Conduct concrete boom delivery operations
CPCCCO3053A	Slump test concrete
CPCCCO3054A	Operate concrete agitator trucks
CPCCCO3055A	Install topping slabs
CPCCCO4001A	Supervise concreting work
CPCCDE2012A	Carry out manual general demolition
CPCCDE3014A	Remove non-friable asbestos
CPCCDE3015A	Remove friable asbestos

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Code	Title
CPCCDE3016A	Identify hazards on demolition sites and apply risk management strategies
CPCCDE3017A	Select and use hand tools and equipment for demolition tasks
CPCCDE3018A	Select and use small plant and equipment for demolition tasks
CPCCDE3019A	Demolish small buildings and structures using hand tools and small plant and equipment
CPCCDE3020A	Select and use tools and equipment for hot work in the demolition industry
CPCCDE3021A	Operate demolition material crushing plants
CPCCDE3022A	Manage demolition recyclable and waste materials using load shifting equipment
CPCCDE3023A	Operate skid steer loaders at ground level on demolition sites
CPCCDE3024A	Operate mobile plant on suspended floors on demolition sites
CPCCDE3025A	Operate remote-controlled plant on demolition sites
CPCCDE3026A	Operate excavators at ground level to demolish building elements
CPCCDE4001A	Plan and prepare for activities on demolition sites
CPCCDE4002A	Plan and supervise demolition work to minimise environmental and public health and safety impact
CPCCDE4003A	Supervise individual activities on demolition sites
CPCCDE4004A	Finalise demolition activities and supervise property handover
CPCCDO2011A	Handle and use dogging tools and equipment
CPCCDO3011A	Perform dogging
CPCCDO3012A	Perform crane scheduling
CPCCJN2001A	Assemble components
CPCCJN2002B	Prepare for off-site manufacturing process
CPCCJN2003A	Package manufactured products for transport

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Code	Title
CPCCJN3001A	Use static machines
CPCCJN3002A	Use computer-controlled machinery
CPCCJN3003A	Manufacture components for door and window frames and doors
CPCCJN3004A	Manufacture joinery components
CPCCJN3005A	Cut and install glass
CPCCJS3002A	Manufacture stair components for straight flighted stairs
CPCCJS3003A	Assemble and install stairs
CPCCJS3004A	Manufacture and install continuous handrailing and special stair components
CPCCJS3005A	Manufacture stair components for curved and geometric stairs
CPCCJS3006A	Construct fabricated stairs
CPCCJS3011A	Design and set out stairs
CPCCLBM3001A	Licence to operate a concrete placing boom
CPCCLDG3001A	Licence to perform dogging
CPCCLHS3001A	Licence to operate a personnel and materials hoist
CPCCLHS3002A	Licence to operate a materials hoist
CPCCLRG3001A	Licence to perform rigging basic level
CPCCLRG3002A	Licence to perform rigging intermediate level
CPCCLRG4001A	Licence to perform rigging advanced level
CPCCLSF2001A	Licence to erect, alter and dismantle scaffolding basic level
CPCCLSF3001A	Licence to erect, alter and dismantle scaffolding intermediate level
CPCCLSF4001A	Licence to erect, alter and dismantle scaffolding advanced level
CPCCLTC4001A	Licence to operate a tower crane

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Code	Title
CPCCLTC4002A	Licence to operate a self-erecting tower crane

CPCCOHS - CPCPDR

Code	Title
CPCCOHS1001A	Work safely in the construction industry
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry
CPCCPA3001A	Prepare subgrade, base and bedding course for segmental paving
CPCCPA3002A	Lay segmental pavers
CPCCPA3003A	Cut segmental pavers
CPCCPA3004A	Finish segmental paving
CPCCPA3005A	Maintain and repair segmental paving
CPCCPB3001A	Fix standard plasterboard wall sheets
CPCCPB3002A	Fix standard plasterboard ceiling sheets
CPCCPB3003A	Fix battens
CPCCPB3004A	Fix wet area sheets
CPCCPB3005A	Fix ceiling sheets to external protected areas
CPCCPB3006A	Fix fibre cement board
CPCCPB3007A	Apply levels of finish standards to planning and inspection of own work
CPCCPB3008A	Mix plastering compounds
CPCCPB3009A	Finish plasterboard joins manually
CPCCPB3010A	Manually sand plaster work
CPCCPB3011A	Finish category 1 and 2 wet areas

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CPCCPB3012A	Cut and fix paper-faced cornices
CPCCPB3013A	Plan travel routes
CPCCPB3014A	Install batt insulation products
CPCCPB3015A	Install acoustic and thermal environmental protection systems
CPCCPB3016A	Install and finish columns
CPCCPB3017A	Rectify faults in plaster applications
CPCCPB3018A	Use vacuum and electric sanding equipment to finish plaster work
CPCCPB3019A	Inspect equipment for serviceability
CPCCPB3020A	Match, mitre and install cast ornamental cornices
CPCCPB3021A	Install and fix residential acoustic plaster products
CPCCPB3022A	Use mechanical jointing equipment to finish joints
CPCCPB3023A	Load and unload plaster and plaster-related products
CPCCPB3024A	Use manual handling equipment to manoeuvre plaster products
CPCCPB3025A	Store plasterboard and related products
CPCCPB3026B	Erect and maintain trestle and plank systems
CPCCPB3027A	Install ceiling insulation
CPCCPD2011A	Handle painting and decorating materials
CPCCPD2012A	Use painting and decorating tools and equipment
CPCCPD2013A	Remove and replace doors and door and window components
CPCCPD3021A	Prepare surfaces for painting
CPCCPD3022A	Apply paint by brush and roller
CPCCPD3023A	Apply texture coat paint finishes by brush, roller and spray
CPCCPD3024A	Apply paint by spray
CPCCPD3025A	Match specified paint colour

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CPCCPD3026A	Apply stains and clear timber finishes
CPCCPD3027A	Apply wallpaper
CPCCPD3028A	Apply decorative paint finishes
CPCCPD3029A	Remove graffiti and apply protective coatings
CPCCPD3030B	Apply protective paint coating systems
CPCCPD3031A	Implement safe lead paint and asbestos work practices in the painting industry
CPCCPD3032A	Apply advanced wallpaper techniques
CPCCPD3033A	Apply intumescent coatings
CPCCPD3034A	Apply advanced decorative paint finishes
CPCCRI3001A	Operate personnel and materials hoists
CPCCRI3012A	Perform basic rigging
CPCCRI3013A	Perform intermediate rigging
CPCCRI3014A	Perform advanced structural steel erection
CPCCRI3015A	Perform advanced tilt-up slab erection
CPCCRI3016A	Perform advanced tower crane erection
CPCCRT2001A	Handle roof tiling materials
CPCCRT2002A	Use roof tiling tools and equipment
CPCCRT3001A	Tile regular roofs
CPCCRT3002A	Tile irregular roofs
CPCCRT3003B	Repair and replace valleys, valley irons and flashings
CPCCRT3004B	Repair and renovate tile roofs
CPCCRT3005B	Slate a roof
CPCCRT3006B	Fix shingles to roofs and facades
CPCCSC2001A	Safely handle and use scaffolding tools and equipment

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CPCCSC2002A	Erect and dismantle basic scaffolding
CPCCSC3001A	Erect and dismantle intermediate scaffolding
CPCCSF2001A	Handle steelfixing materials
CPCCSF2002A	Use steelfixing tools and equipment
CPCCSF2003A	Cut and bend materials using oxy-LPG equipment
CPCCSF2004A	Place and fix reinforcement materials
CPCCSF2005A	Arc weld reinforcement steel
CPCCSF2006A	Machine cut reinforcement materials
CPCCSF2007A	Splice and anchor using mechanical methods
CPCCSF3001A	Apply reinforcement schedule
CPCCSF3002A	Carry out monostrand post-tensioning
CPCCSF3003A	Carry out multistrand post-tensioning
CPCCSF3004A	Carry out stressbar post-tensioning
CPCCSH2001A	Prepare surfaces
CPCCSH2002A	Use aluminium sections for fabrication
CPCCSH2003A	Apply and install sealant and sealant devices
CPCCSH3001A	Set out and assemble cabinets, showcases, wall units, counters and workstations
CPCCSH3002A	Set out and fabricate shopfront commercial entries bulkheads and component fittings
CPCCSH3003A	Assemble and install shopfront commercial entries bulkheads and components
CPCCSH3005A	Apply and trim decorative finishes
CPCCSH3006A	Apply finishes
CPCCSI2001A	Use colour for signage
CPCCSI2002A	Lay out and design signage

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CPCCSI2003A	Prepare surfaces for signage
CPCCSI2004A	Produce digital signage
CPCCSI2005A	Fabricate signage
CPCCSI2006A	Signwrite to simple forms
CPCCSI2007A	Apply fasteners and fixings
CPCCSI3001A	Produce vinyl signage
CPCCSI3002A	Use rotary router
CPCCSI3003A	Signwrite to decorative forms
CPCCSI3004A	Apply advanced vinyl applications
CPCCSI3005A	Use engraving systems
CPCCSI3006A	Apply gilding to signage
CPCCSI3007A	Apply lines and scrolls
CPCCSI3008A	Write showcards and chalkboards
CPCCSI3009A	Screen-print signage
CPCCSI3010A	Hand render pictorials
CPCCSI3011A	Use LED technology for signage
CPCCSI3012A	Apply electrical theory for illuminated signage
CPCCSI3013A	Install LED systems
CPCCSI3014A	Manufacture gas-charged glass-formed illuminated signage
CPCCSI3015A	Produce airbrushed signage
CPCCSI3016A	Produce digital signage using advanced software applications
CPCCSP2001A	Handle solid plastering materials
CPCCSP2002A	Use solid plastering tools and equipment
CPCCSP2003A	Prepare surfaces for plastering
CPCCSP3001A	Apply float and render to straight and curved surfaces

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CPCCSP3002A	Apply set coats
CPCCSP3003A	Apply trowelled texture coat finishes
CPCCSP3004A	Restore and renovate solid plasterwork
CPCCSP3005A	Install pre-cast decorative mouldings
CPCCSP3006A	Install cast plaster blockwork
CPCCSP3007A	Apply plaster by projection machine
CPCCST2001A	Prepare for stonemasonry construction process
CPCCST2003A	Finish stone
CPCCST2004A	Lay stone
CPCCST2005A	Carry out load slinging of off-site materials
CPCCST2006A	Identify and use stone products
CPCCST3001A	Dress and mould stone
CPCCST3002A	Shape solid stone
CPCCST3003A	Split stone manually
CPCCST3004A	Dress stone manually
CPCCST3006A	Machine stone
CPCCST3007A	Turn stone
CPCCST3009A	Use computer-controlled static machinery to produce stone components
CPCCST3010A	Set out and cut letters in stone
CPCCST3011A	Plan monument construction
CPCCST3012A	Build stone veneer walls
CPCCST3013A	Carry out cemetery monument fixing
CPCCST3014A	Set and anchor stone facades
CPCCST3015A	Apply gilding to stone

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CPCCST3016A	Build solid stonemasonry walls
CPCCST3017A	Construct stone arches
CPCCST3018A	Inlay lead to stone
CPCCST3019A	Lay stonemasonry stairs
CPCCST3020A	Produce reconstituted stone
CPCCST3021A	Renovate and restore stone work
CPCCST3022A	Carry out profile work
CPCCSV5003A	Produce working drawings for residential buildings
CPCCSV5004A	Apply legislation to urban development and building controls
CPCCSV5009A	Assess the impact of fire on building materials
CPCCSV6001A	Assess the construction of buildings up to three storeys
CPCCSV6002A	Produce working drawings for buildings up to three storeys
CPCCSV6003A	Assess construction faults in buildings up to three storeys
CPCCSV6004A	Apply footing and geomechanical design principles to buildings up to three storeys
CPCCSV6005A	Evaluate services layout and connection methods for residential and commercial buildings up to three storeys
CPCCSV6006A	Evaluate the use of concrete for residential and commercial buildings up to three storeys
CPCCSV6007A	Assess structural requirements for buildings up to three storeys
CPCCSV6008A	Apply building codes and standards to buildings up to three storeys
CPCCSV6009A	Implement performance-based codes and risk management principles for buildings up to three storeys
CPCCSV6010A	Apply fire technology to buildings up to three storeys
CPCCSV6011A	Apply legal procedures to building surveying
CPCCSV6012A	Facilitate community development consultation

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CPCCSV6013A	Coordinate building refurbishment
CPCCSV6014A	Manage and plan land use
CPCCSV6015A	Analyse and present building surveying research information
CPCCSV6016A	Apply building surveying procedures to buildings up to three storeys
CPCCVE1002B	Undertake a basic computer design project
CPCCVE1011A	Undertake a basic construction project
CPCCWC2001A	Complete penetrations and flashings
CPCCWC3001A	Install and finish plasterboard and fibre cement sheeting to curved walls and ceilings
CPCCWC3002A	Install and finish plasterboard and fibre cement sheeting to arches
CPCCWC3003A	Install dry wall passive fire-rated systems
CPCCWC3004A	Install suspended ceilings
CPCCWF2001A	Handle wall and floor tiling materials
CPCCWF2002A	Use wall and floor tiling tools and equipment
CPCCWF3001A	Prepare surfaces for tiling application
CPCCWF3002A	Fix floor tiles
CPCCWF3003A	Fix wall tiles
CPCCWF3004A	Repair wall and floor tiles
CPCCWF3005A	Carry out decorative tiling
CPCCWF3006A	Carry out mosaic tiling
CPCCWF3007A	Tile curved surfaces
CPCCWF3008A	Tile domestic pools and spas
CPCCWP2001A	Handle waterproofing materials
CPCCWP2002A	Use waterproofing tools and equipment

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CPCCWP2003A	Prepare for construction waterproofing process
CPCCWP2004A	Prepare surfaces for waterproofing application
CPCCWP3001A	Apply waterproofing process to below ground level wet areas
CPCCWP3002A	Apply waterproofing process to internal wet areas
CPCCWP3003A	Apply waterproofing process to external wet areas
CPCCWP3004A	Apply waterproofing remedial processes
CPCMCM7001A	Plan and manage complex projects
CPCMCM7002A	Manage the quality of projects and processes
CPCPCM2039A	Carry out interactive workplace communication
CPCPCM2040A	Read plans and calculate plumbing quantities
CPCPCM2041A	Work effectively in the plumbing and services sector
CPCPCM2043A	Carry out WHS requirements
CPCPCM2045A	Handle and store plumbing materials
CPCPCM2046A	Use plumbing hand and power tools
CPCPCM2047A	Carry out levelling
CPCPCM2048A	Cut and join sheet metal
CPCPCM2049A	Cut using oxy-LPG-acetylene equipment
CPCPCM2050A	Mark out materials
CPCPCM2052A	Weld using oxy-acetylene equipment
CPCPCM2053A	Weld using manual metal arc welding equipment
CPCPCM2054A	Carry out simple concreting and rendering
CPCPCM2055A	Work safely on roofs
CPCPCM3021A	Flash penetrations through roofs and walls
CPCPCM3022A	Weld polyethylene and polypropylene pipes using fusion method

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CPCPCM3023A	Fabricate and install non-ferrous pressure piping
CPCPCM4011A	Carry out work-based risk control processes
CPCPCM4012A	Estimate and cost work
CPCPCM4013A	Produce 2-D architectural drawings using CAD software
CPCPCM4014A	Prepare simple sketches and drawings
CPCPCM5010A	Design complex sanitary plumbing and drainage systems
CPCPCM5011A	Design complex cold water systems
CPCPCM5012A	Design complex stormwater and roof drainage systems
CPCPCM5013A	Design complex (non-solar) heated water systems
CPCPCM5014A	Design sewer infrastructure systems
CPCPDR2021A	Locate and clear blockages
CPCPDR2022A	Install domestic treatment plants
CPCPDR2023A	Maintain effluent disinfection systems
CPCPDR2024A	Install stormwater and sub-soil drainage systems
CPCPDR2025A	Drain work site
CPCPDR2026A	Install prefabricated inspection openings and enclosures
CPCPDR3021A	Plan layout of a residential sanitary drainage system
CPCPDR3022A	Install below ground sanitary drainage systems
CPCPDR3023A	Install on-site disposal systems
CPCPDR4011B	Design and size sanitary drainage systems
CPCPDR4012B	Design and size stormwater drainage systems
CPCPDR4013B	Design and size domestic treatment plant disposal systems

CPCPFS - CPCSUS

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Code	Title
CPCPFS2021A	Connect static storage tanks for fixed fire protection systems
CPCPFS2022A	Install portable fire equipment
CPCPFS3030A	Design pre-calculated fire sprinkler systems
CPCPFS3031A	Fabricate and install fire hydrant and hose reel systems
CPCPFS3034A	Install control valve assemblies, actuating devices and local alarms
CPCPFS3036A	Install special hazard systems
CPCPFS3037A	Install domestic and residential life safety sprinkler systems
CPCPFS3038A	Test and maintain fire hydrant and hose reel installations
CPCPFS3040A	Conduct basic functional testing of water-based fire-suppression systems
CPCPFS3041A	Inspect and test fire pumpsets
CPCPFS3042A	Conduct annual functional testing of complex water-based fire-suppression systems
CPCPFS3043A	Conduct functional water flow testing
CPCPFS3044A	Install distribution and range pipes
CPCPFS3045A	Fit off sprinkler heads, controls and ancillary equipment
CPCPFS3046A	Test the integrity of water-based fire protection systems using pressure
CPCPFS3047A	Test and maintain automatic fire sprinklers
CPCPFS3048A	Install fixed fire pumpsets
CPCPFS3049A	Conduct preventive maintenance on fixed fire pumpsets
CPCPFS4021A	Commission domestic and residential fire suppression sprinkler systems
CPCPFS4022A	Commission and maintain special hazard fire suppression systems
CPCPFS4023A	Commission fire system pumpsets

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CPCPFS4024A	Design residential and domestic fire sprinkler systems
CPCPFS4025A	Commission fire alarm and detection system interface devices
CPCPFS4026A	Commission firefighting appliances
CPCPFS4027A	Commission fire sprinkler systems
CPCPFS5010A	Design fire-compliant hydraulic services
CPCPFS5011A	Design fire sprinkler systems
CPCPFS5012A	Design fire hydrant and hose reel systems
CPCPGS3046A	Install LPG systems in caravans, mobile homes and mobile workplaces
CPCPGS3047A	Install LPG systems in marine craft
CPCPGS3048A	Install gas pressure control equipment
CPCPGS3049A	Install Type A gas appliance flues
CPCPGS3050A	Install Type B gas appliance flues
CPCPGS3051A	Purge consumer piping
CPCPGS3052A	Maintain Type A gas appliances
CPCPGS3053A	Disconnect and reconnect Type A gas appliances
CPCPGS3054A	Calculate and install natural ventilation for Type A gas appliances
CPCPGS3055A	Install gas sub-meters
CPCPGS3056A	Install gas piping systems
CPCPGS3057A	Size consumer gas piping systems
CPCPGS3059A	Install LPG storage of aggregate storage capacity up to 500 litres
CPCPGS3060A	Install LPG storage of aggregate storage capacity exceeding 500 litres and less than 8KL
CPCPGS3061A	Install and commission Type A gas appliances
CPCPGS4011C	Design and size consumer gas installations

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CPCPGS4022A	Service Type A gas appliances
CPCPGS4023B	Install, commission and service Type B gas appliances
CPCPIG2021A	Design domestic urban irrigation systems
CPCPIG3021A	Set out, install and commission irrigation systems
CPCPIG3022A	Install and commission domestic irrigation pumps
CPCPMS2021A	Assemble mechanical services components
CPCPMS3031A	Fabricate and install steel pressure piping
CPCPMS3032A	Select and fit insulation and sheathing
CPCPMS3033A	Install small bore heating systems
CPCPMS3034A	Install medical gas pipeline systems
CPCPMS3035A	Install and test ducting systems
CPCPMS3036A	Install air handling units
CPCPMS3037A	Install and test split system air conditioning
CPCPMS3038A	Install air conditioning control equipment
CPCPMS3039A	Maintain mechanical services equipment
CPCPMS3040A	Install and maintain evaporative air cooling systems
CPCPMS3041A	Install domestic solid fuel burning appliances
CPCPMS4011B	Design, size and lay out heating and cooling systems
CPCPMS4022A	Commission air and water systems
CPCPMS4023A	Design compressed air systems
CPCPMS5010A	Design steam generation and distribution systems
CPCPMS5011A	Design air conditioning and ventilation systems
CPCPMS5012A	Design sound attenuated hydraulic services
CPCPMS5013A	Design hydronic heating and cooling systems
CPCPPS5000B	Design gas bulk storage systems

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CPCPPS5001B	Design industrial gas systems
CPCPPS5002B	Design gas reticulation systems
CPCPPS5009B	Analyse and report on technical plumbing systems
CPCPPS5011B	Coordinate services and penetrations within a building
CPCPPS5014A	Locate and maintain piping systems
CPCPPS5015B	Inspect plumbing and drainage systems
CPCPPS5023A	Design solar water heating systems
CPCPPS5024A	Conduct a water audit and identify water-saving initiatives
CPCPPS5025A	Design grey water re-use systems
CPCPPS5026A	Design rainwater collection, storage, distribution and re-use systems
CPCPPS5027A	Design irrigation systems
CPCPPS5028A	Design trade waste pre-treatment systems
CPCPPS5030A	Design pump systems
CPCPPS5032A	Design siphonic stormwater drainage systems
CPCPPS5033A	Design vacuum sewerage systems
CPCPRF2022A	Select and install roof sheeting and wall cladding
CPCPRF2023A	Collect and store roof water
CPCPRF2024A	Fabricate roof coverings for curved structures
CPCPRF3021A	Receive roofing materials
CPCPRF3022A	Fabricate and install roof drainage components
CPCPRF3023A	Fabricate and install external flashings
CPCPRF3024A	Install roof components
CPCPRF3025A	Install roof coverings to curved roof structures
CPCPRF3026A	Install composite roof systems

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CPCPRF4011B	Design and size roof drainage systems
CPCPSN3011B	Plan layout of a residential sanitary plumbing system
CPCPSN3022A	Install discharge pipes
CPCPSN3023A	Fabricate and install sanitary stacks
CPCPSN3024A	Install and fit off sanitary fixtures
CPCPSN3025A	Install pre-treatment facilities
CPCPSN3026A	Install sewerage pumpsets
CPCPSN4011B	Design and size sanitary plumbing systems
CPCPWT3020A	Connect and install storage tanks to a domestic water supply
CPCPWT3021A	Set out and install water services
CPCPWT3022A	Install and adjust water service controls and devices
CPCPWT3023A	Install and commission water heating systems
CPCPWT3024A	Install and maintain domestic water treatment equipment
CPCPWT3025A	Install water pumpsets
CPCPWT3026A	Fit off and commission heated and cold water services
CPCPWT3027A	Connect irrigation systems from drinking water supply
CPCPWT3028A	Install water services
CPCPWT3029A	Install water pipe systems
CPCPWT3030A	Install home fire sprinkler systems
CPCPWT4011B	Design and size heated and cold water services and systems
CPCPWT4022A	Commission and maintain backflow prevention devices
CPCPWT4023A	Commission and maintain hot and heated water temperature control devices
CPCSFS5001A	Define scope and hazard level of fire systems design projects
CPCSFS5002A	Research and interpret detailed fire systems design project requirements

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CPCSFS5003A	Develop plans and methodology for fire systems design projects
CPCSFS5005A	Research and evaluate fire system technologies and components
CPCSFS5006A	Create detailed designs for fire sprinkler systems
CPCSFS5007A	Create detailed designs for hydrant and hose reel systems
CPCSFS5008A	Create detailed designs for fire detection and warning systems
CPCSFS5009A	Create detailed designs for fire systems' water supplies
CPCSFS5010A	Provide documentation and support for fabrication of fire sprinkler systems
CPCSFS5011A	Provide design documentation and review and support fire system installation processes
CPCSFS5013A	Support commissioning processes and finalise fire systems design projects
CPCSFS5014A	Conduct annual fire systems certification inspections
CPCSFS5015A	Assess documentation for annual fire systems certification inspections
CPCSFS7001A	Define scope of and initiate special hazard fire systems design projects
CPCSFS7002A	Analyse, design and evaluate complex special hazard fire systems
CPCSFS7003A	Develop and submit tenders for fire systems design solutions
CPCSUS4001A	Implement and monitor environmentally sustainable work practices
CPCSUS4002A	Use building science principles to construct energy efficient buildings
CPCSUS4003A	Maximise energy efficiency through applied trade skills
CPCSUS5001A	Develop workplace policies and procedures for sustainability
CPCSUS5002A	Develop action plans to retrofit existing buildings for energy efficiency
CPCSUS5003A	Manage energy efficient building methods and strategies

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CPC08 units with prerequisite unit requirements

CPC08v9 units of competency with prerequisite unit requirements	
CPC08 unit	**Prerequisite unit**
CPCCBC4051A	CPCCOHS1001A Work safely in the construction industry
CPCCBC5014A	CPCCOHS1001A Work safely in the construction industry
CPCCBC5018A	CPCCBC5001B Apply building codes and standards to the construction process for medium rise building projects
CPCCBL2001A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCBL2002A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCBL3001A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCBL3002A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCBL3003A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCBL3004A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCBL3005A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCBL3006A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCBL3007A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCBL3009A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCBL3010A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCBL3011A	CPCCOHS2001A Apply OHS requirements, policies and

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CPC08v9 units of competency with prerequisite unit requirements	
CPC08 unit	**Prerequisite unit**
	procedures in the construction industry
CPCCBL3012A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCBL3013A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCBL3014A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCBL3015A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCBL3016A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCBL3017A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCBL3018A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCA2002B	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCA2003A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCA2011A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCA3001A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCA3002A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCA3003A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCA3004A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCA3005B	CPCCOHS2001A Apply OHS requirements, policies and

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CPC08v9 units of competency with prerequisite unit requirements	
CPC08 unit	**Prerequisite unit**
	procedures in the construction industry
CPCCCA3006B	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCA3007C	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCA3008B	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCA3009B	CPCCCA3007C Construct pitched roofs CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCA3010A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCA3011A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCA3012A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCA3013A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCA3014A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCA3015A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCA3016A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCA3017B	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCA3018A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCA3019A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

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CPC08v9 units of competency with prerequisite unit requirements	
CPC08 unit	**Prerequisite unit**
CPCCCA3020A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCA3021A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCA3022A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCA3023A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCM2002A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCM2004A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCM2005B	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCM2006B	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCM2007B	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCM2008B	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCM2009A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPPCCM2010B	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCM3001C	CPCCCM2010B Work safely at heights CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCM3002A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCM3003A	CPCCOHS2001A Apply OHS requirements, policies and

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CPC08v9 units of competency with prerequisite unit requirements	
CPC08 unit	**Prerequisite unit**
	procedures in the construction industry
CPCCCO2013A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCO2014A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCO2021A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCO2022A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCO3035A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCO3036A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCO3041A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCO3042A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCO3043A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCO3044A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCO3046A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCO3047A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCO3048A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCO3049A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCO3050A	CPCCOHS2001A Apply OHS requirements, policies and

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CPC08v9 units of competency with prerequisite unit requirements	
CPC08 unit	**Prerequisite unit**
	procedures in the construction industry
CPCCCO3051A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCO3052A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCO3053A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCO3054A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCO3055A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCCO4001A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCDE2012A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCDE3014A	CPCCOHS1001A Work safely in the construction industry
CPCCDE3015A	CPCCOHS1001A Work safely in the construction industry
CPCCDE3016A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCDE3017A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCDE3018A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCDE3019A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCDE3020A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCDE3021A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

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CPC08v9 units of competency with prerequisite unit requirements	
CPC08 unit	**Prerequisite unit**
CPCCDO2011A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCDO3011A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCDO3012A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCJN2001A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCJN2002B	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCJN2003A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCJN3001A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCJN3002A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCJN3003A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCJN3004A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCJN3005A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCJS3002A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCJS3003A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCJS3004A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCJS3005A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

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CPC08v9 units of competency with prerequisite unit requirements	
CPC08 unit	**Prerequisite unit**
CPCCJS3006A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCJS3011A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCLRG3001A	CPCCLDG3001A Licence to perform dogging
CPCCLRG3002A	CPCCLRG3001A Licence to perform rigging basic level
CPCCLRG4001A	CPCCLRG3002A Licence to perform rigging intermediate level
CPCCLSF3001A	CPCCLSF2001A Licence to erect, alter and dismantle scaffolding basic level
CPCCLSF4001A	CPCCLSF3001A Licence to erect, alter and dismantle scaffolding intermediate level
CPCCPA3001A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPA3002A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPA3003A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPA3004A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPA3005A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPB3001A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPB3002A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPB3003A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPB3004A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

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CPC08v9 units of competency with prerequisite unit requirements	
CPC08 unit	**Prerequisite unit**
CPCCPB3005A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPB3006A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPB3007A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPB3008A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPB3009A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPB3010A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPB3011A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPB3012A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPB3013A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPB3014A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPB3015A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPB3016A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPB3017A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPB3018A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPB3019A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

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CPC08v9 units of competency with prerequisite unit requirements	
CPC08 unit	**Prerequisite unit**
CPCCPB3020A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPB3021A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPB3022A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPB3023A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPB3024A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPB3025A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPB3026B	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPB3027A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPD2011A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPD2012A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPD2013A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPD3021A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPD3022A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPD3023A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPD3024A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

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CPC08v9 units of competency with prerequisite unit requirements	
CPC08 unit	**Prerequisite unit**
CPCCPD3025A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPD3026A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPD3027A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPD3028A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPD3029A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPD3030B	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPD3031A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPD3032A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPD3033A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCPD3034A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCRI3001A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCRI3012A	CPCCDO3011A Perform dogging CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCRI3013A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry CPCCRI3012A Perform basic rigging
CPCCRI3014A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

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CPC08v9 units of competency with prerequisite unit requirements	
CPC08 unit	**Prerequisite unit**
	CPCCRI3012A Perform basic rigging
CPCCRI3015A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry CPCCRI3013A Perform intermediate rigging
CPCCRI3016A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry CPCCRI3013A Perform intermediate rigging
CPCCRT2001A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCRT2002A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCRT3001A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCRT3002A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCRT3003B	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCRT3004B	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCRT3005B	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCRT3006B	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSC2001A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSC2002A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSC3001A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry CPCCSC2002A Erect and dismantle basic scaffolding

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CPC08v9 units of competency with prerequisite unit requirements	
CPC08 unit	**Prerequisite unit**
CPCCSF2001A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSF2002A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSF2003A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSF2004A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSF2005A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSF2006A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSF2007A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSF3001A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSF3002A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSF3003A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSF3004A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSH2001A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSH2002A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSH2003A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSH3001A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

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CPC08v9 units of competency with prerequisite unit requirements	
CPC08 unit	**Prerequisite unit**
CPCCSH3002A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSH3003A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSH3005A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSH3006A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSI2001A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSI2002A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSI2003A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSI2004A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSI2005A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSI2006A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSI2007A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSI3001A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSI3002A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSI3003A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSI3004A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

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CPC08v9 units of competency with prerequisite unit requirements	
CPC08 unit	**Prerequisite unit**
CPCCSI3005A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSI3006A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSI3007A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSI3008A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSI3009A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSI3010A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSI3011A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSI3012A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSI3013A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSI3014A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSI3015A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSP2001A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSP2002A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSP2003A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSP3001A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

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CPC08v9 units of competency with prerequisite unit requirements	
CPC08 unit	**Prerequisite unit**
CPCCSP3002A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSP3003A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSP3004A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSP3005A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSP3006A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCSP3007A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCST2001A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCST2003A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCST2004A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCST2005A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCST2006A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCST3001A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCST3002A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCST3003A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCST3004A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

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CPC08v9 units of competency with prerequisite unit requirements	
CPC08 unit	**Prerequisite unit**
CPCCST3006A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCST3007A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCST3009A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCST3010A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCST3011A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCST3012A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCST3013A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCST3014A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCST3015A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCST3016A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCST3017A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCST3018A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCST3019A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCST3020A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCST3021A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

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CPC08v9 units of competency with prerequisite unit requirements	
CPC08 unit	**Prerequisite unit**
CPCCST3022A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCWC2001A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCWC3001A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCWC3002A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCWC3003A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCWC3004A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCWF2001A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCWF2002A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCWF3001A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCWF3002A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCWF3003A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCWF3004A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCWF3005A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCWF3006A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCWF3007A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

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CPC08v9 units of competency with prerequisite unit requirements	
CPC08 unit	**Prerequisite unit**
CPCCWF3008A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCWP2001A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCWP2002A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCWP2003A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCWP2004A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCWP3001A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCWP3002A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCWP3003A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCCWP3004A	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
CPCPCM2041A	CPCPCM2043A Carry out WHS requirements
CPCPCM2045A	CPCPCM2043A Carry out WHS requirements
CPCPCM2046A	CPCPCM2043A Carry out WHS requirements
CPCPCM2047A	CPCPCM2043A Carry out WHS requirements
CPCPCM2048A	CPCPCM2043A Carry out WHS requirements
CPCPCM2049A	CPCPCM2043A Carry out WHS requirements
CPCPCM2050A	CPCPCM2043A Carry out WHS requirements
CPCPCM2052A	CPCPCM2043A Carry out WHS requirements
CPCPCM2053A	CPCPCM2043A Carry out WHS requirements

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CPC08v9 units of competency with prerequisite unit requirements	
CPC08 unit	**Prerequisite unit**
CPCPCM2054A	CPCPCM2043A Carry out WHS requirements
CPCPCM2055A	CPCPCM2043A Carry out WHS requirements
CPCPCM3021A	CPCPCM2043A Carry out WHS requirements
CPCPCM3022A	CPCPCM2043A Carry out WHS requirements
CPCPCM3023A	CPCPCM2043A Carry out WHS requirements
CPCPDR2021A	CPCPCM2043A Carry out WHS requirements
CPCPDR2022A	CPCPCM2043A Carry out WHS requirements
CPCPDR2023A	CPCPCM2043A Carry out WHS requirements
CPCPDR2024A	CPCPCM2043A Carry out WHS requirements
CPCPDR2025A	CPCPCM2043A Carry out WHS requirements
CPCPDR2026A	CPCPCM2043A Carry out WHS requirements
CPCPDR3021A	CPCPCM2043A Carry out WHS requirements
CPCPDR3022A	CPCPCM2043A Carry out WHS requirements
CPCPDR3023A	CPCPCM2043A Carry out WHS requirements
CPCPFS2021A	CPCPCM2043A Carry out WHS requirements
CPCPFS2022A	CPCPCM2043A Carry out WHS requirements
CPCPFS3031A	CPCPCM2043A Carry out WHS requirements
CPCPFS3034A	CPCPCM2043A Carry out WHS requirements
CPCPFS3036A	CPCPCM2043A Carry out WHS requirements
CPCPFS3037A	CPCPCM2043A Carry out WHS requirements
CPCPFS3038A	CPCPCM2043A Carry out WHS requirements
CPCPFS3040A	CPCPCM2043A Carry out WHS requirements OR BOTHCPPCMN2002A Participate in workplace safety arrangements

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CPC08v9 units of competency with prerequisite unit requirements	
CPC08 unit	**Prerequisite unit**
	AND CPPFES2006A Prepare for installation and servicing operations
CPCPFS3041A	CPCPCM2043A Carry out WHS requirements OR BOTHCPPCMN2002A Participate in workplace safety arrangements AND CPPFES2006A Prepare for installation and servicing operations
CPCPFS3042A	CPCPCM2043A Carry out WHS requirements OR BOTHCPPCMN2002A Participate in workplace safety arrangements AND CPPFES2006A Prepare for installation and servicing operations
CPCPFS3043A	CPCPCM2043A Carry out WHS requirements OR BOTHCPPCMN2002A Participate in workplace safety arrangements AND CPPFES2006A Prepare for installation and servicing operations
CPCPFS3044A	CPCPCM2043A Carry out WHS requirements
CPCPFS3045A	CPCPCM2043A Carry out WHS requirements
CPCPFS3046A	CPCPCM2043A Carry out WHS requirements
CPCPFS3047A	CPCPCM2043A Carry out WHS requirements
CPCPFS3048A	CPCPCM2043A Carry out WHS requirements OR BOTHCPPCMN2002A Participate in workplace safety arrangements AND CPPFES2006A Prepare for installation and servicing operations
CPCPFS3049A	CPCPCM2043A Carry out WHS requirements OR BOTHCPPCMN2002A Participate in workplace safety arrangements

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CPC08v9 units of competency with prerequisite unit requirements	
CPC08 unit	**Prerequisite unit**
	AND CPPFES2006A Prepare for installation and servicing operations
CPCPGS3046A	CPCPCM2043A Carry out WHS requirements
CPCPGS3047A	CPCPCM2043A Carry out WHS requirements
CPCPGS3048A	CPCPCM2043A Carry out WHS requirements
CPCPGS3049A	CPCPCM2043A Carry out WHS requirements
CPCPGS3050A	CPCPCM2043A Carry out WHS requirements
CPCPGS3051A	CPCPCM2043A Carry out WHS requirements
CPCPGS3052A	CPCPCM2043A Carry out WHS requirements
CPCPGS3053A	CPCPCM2043A Carry out WHS requirements
CPCPGS3054A	CPCPCM2043A Carry out WHS requirements
CPCPGS3055A	CPCPCM2043A Carry out WHS requirements
CPCPGS3056A	CPCPCM2043A Carry out WHS requirements
CPCPGS3057A	CPCPCM2043A Carry out WHS requirements
CPCPGS3059A	CPCPCM2043A Carry out WHS requirements
CPCPGS3060A	CPCPCM2043A Carry out WHS requirements
CPCPGS3061A	CPCPCM2043A Carry out WHS requirements
CPCPIG3021A	CPCPCM2043A Carry out WHS requirements
CPCPIG3022A	CPCPCM2043A Carry out WHS requirements
CPCPMS2021A	CPCPCM2043A Carry out WHS requirements
CPCPMS3031A	CPCPCM2043A Carry out WHS requirements
CPCPMS3032A	CPCPCM2043A Carry out WHS requirements
CPCPMS3033A	CPCPCM2043A Carry out WHS requirements

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CPC08v9 units of competency with prerequisite unit requirements	
CPC08 unit	**Prerequisite unit**
CPCPMS3034A	CPCPCM2043A Carry out WHS requirements
CPCPMS3035A	CPCPCM2043A Carry out WHS requirements
CPCPMS3036A	CPCPCM2043A Carry out WHS requirements
CPCPMS3037A	CPCPCM2043A Carry out WHS requirements
CPCPMS3038A	CPCPCM2043A Carry out WHS requirements
CPCPMS3039A	CPCPCM2043A Carry out WHS requirements
CPCPMS3040A	CPCPCM2043A Carry out WHS requirements
CPCPMS3041A	CPCPCM2043A Carry out WHS requirements
CPCPRF2022A	CPCPCM2043A Carry out WHS requirements
CPCPRF2023A	CPCPCM2043A Carry out WHS requirements
CPCPRF2024A	CPCPCM2043A Carry out WHS requirements
CPCPRF3021A	CPCPCM2043A Carry out WHS requirements
CPCPRF3022A	CPCPCM2043A Carry out WHS requirements
CPCPRF3023A	CPCPCM2043A Carry out WHS requirements
CPCPRF3024A	CPCPCM2043A Carry out WHS requirements
CPCPRF3025A	CPCPCM2043A Carry out WHS requirements
CPCPRF3026A	CPCPCM2043A Carry out WHS requirements
CPCPSN3022A	CPCPCM2043A Carry out WHS requirements
CPCPSN3023A	CPCPCM2043A Carry out WHS requirements
CPCPSN3024A	CPCPCM2043A Carry out WHS requirements
CPCPSN3025A	CPCPCM2043A Carry out WHS requirements
CPCPSN3026A	CPCPCM2043A Carry out WHS requirements
CPCPWT3020A	CPCPCM2043A Carry out WHS requirements

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CPC08v9 units of competency with prerequisite unit requirements	
CPC08 unit	**Prerequisite unit**
CPCPWT3021A	CPCPCM2043A Carry out WHS requirements
CPCPWT3022A	CPCPCM2043A Carry out WHS requirements
CPCPWT3023A	CPCPCM2043A Carry out WHS requirements
CPCPWT3024A	CPCPCM2043A Carry out WHS requirements
CPCPWT3025A	CPCPCM2043A Carry out WHS requirements
CPCPWT3026A	CPCPCM2043A Carry out WHS requirements
CPCPWT3027A	CPCPCM2043A Carry out WHS requirements
CPCPWT3028A	CPCPCM2043A Carry out WHS requirements
CPCPWT3029A	CPCPCM2043A Carry out WHS requirements
CPCPWT3030A	CPCPCM2043A Carry out WHS requirements

Imported units used in CPC08 qualifications

Imported units in CPC08v9	
Unit code	**Unit title**
AHCIRG306A	Troubleshoot irrigation systems
AHCLSC303A	Construct brick and/or block structures and features
AHCLSC307A	Implement a retaining wall project
BSBADM506B	Manage business document design and development
BSBAUD504B	Report on a quality audit
BSBCUS301B	Deliver and monitor a service to customers
BSBCUS402B	Address customer needs
BSBCUS501C	Manage quality customer service

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BSBFIM501A	Manage budgets and financial plans
BSBHRM402A	Recruit, select and induct staff
BSBHRM509A	Manage rehabilitation or return to work programs
BSBINN301A	Promote innovation in a team environment
BSBINN502A	Build and sustain an innovative work environment
BSBITA401A	Design databases
BSBITS401B	Maintain business technology
BSBITU201A	Produce simple word processed documents
BSBITU202A	Create and use spreadsheets
BSBITU301A	Create and use databases
BSBITU402A	Develop and use complex spreadsheets
BSBITU404A	Produce complex desktop published documents
BSBLED401A	Develop teams and individuals
BSBLED502A	Manage programs that promote personal effectiveness
BSBMGT403A	Implement continuous improvement
BSBMGT502B	Manage people performance
BSBMGT515A	Manage operational plan
BSBMGT617A	Develop and implement a business plan
BSBMKG414A	Undertake marketing activities
BSBMKG609A	Develop a marketing plan
BSBOHS201A	Participate in OHS processes
BSBOHS403B	Identify hazards and assess OHS risks
BSBOHS404B	Contribute to the implementation of strategies to control OHS risk
BSBOHS504B	Apply principles of OHS risk management
BSBOHS603B	Analyse and evaluate OHS risk

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BSBPMG404A	Apply quality management techniques
BSBPMG407A	Apply risk management techniques
BSBPMG411A	Apply project quality management techniques
BSBPMG415A	Apply project risk management techniques
BSBPMG504A	Manage project costs
BSBPMG505A	Manage project quality
BSBPMG507A	Manage project communications
BSBPMG508A	Manage project risk
BSBPMG510A	Manage projects
BSBPMG522A	Undertake project work
BSBRES401A	Analyse and present research information
BSBRSK501B	Manage risk
BSBSLS403A	Present a sales solution
BSBSLS404A	Secure prospect commitment
BSBSLS502A	Lead and manage a sales team
BSBSMB301A	Investigate micro business opportunities
BSBSMB401A	Establish legal and risk management requirements of small business
BSBSMB402A	Plan small business finances
BSBSMB404A	Undertake small business planning
BSBSMB405B	Monitor and manage small business operations
BSBSMB406A	Manage small business finances
BSBSMB407A	Manage a small team
BSBWOR401A	Establish effective workplace relationships
BSBWOR402A	Promote team effectiveness
BSBWOR501B	Manage personal work priorities and professional development

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BSBWOR502B	Ensure team effectiveness
BSBWRT401A	Write complex documents
CHCCOM403A	Use targeted communication skills to build relationships
CHCCOM504A	Develop, implement and promote effective workplace communication
CPPCMN2002A	Participate in workplace safety arrangements
CPPDSM4014A	Market property for sale
CPPDSM4022A	Sell and finalise the sale of property by private treaty
CPPDSM5022A	Implement asset management plan
CPPDSM6002A	Conduct a property investment feasibility study
CPPDSM6008A	Develop strategic facilities management plan
CPPFES2006A	Prepare for installation and servicing operations
CPPFES2025A	Inspect, test and maintain gaseous fire-suppression systems
CPPFES2043A	Prevent ozone depleting substance and synthetic greenhouse gas emissions
CPPFES2047A	Inspect and test control and indicating equipment
HLTFA211A	Provide basic emergency life support
HLTHIR403C	Work effectively with culturally diverse clients and co-workers
ICAICT201A	Operate a personal computer
ICAICT102A	Operate a word processing application
ICAICT105A	Operate a spreadsheet application
ICAICT210A	Operate a database application
ICAICT103A	Send and retrieve information using web browsers and email
LGAPLEM502A	Apply ecologically sustainable development principles to the built environment
LMFFM3006B	Install furnishing products
LMFFM3013B	Measure and draw site layout for manufactured furniture products

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LMFFM3028B	Fabricate synthetic solid surface products
LMFFM3030B	Set up, operate and maintain CNC sizing machines
LMFFM3031B	Set up, operate and maintain CNC machining and processing centres
LMFFT4010B	Identify and calculate production costs
LMFGG2008B	Glaze/re-glaze residential windows and doors
MEM05010C	Apply fabrication, forming and shaping techniques
MEM05049B	Perform routine gas tungsten arc welding
MEM05050B	Perform routine gas metal arc welding
MEM10009B	Install refrigeration and air conditioning plant and equipment
MEM10010B	Install pipework and pipework assemblies
MEM18086B	Test, recover, evacuate and charge refrigeration systems
RIICCM210A	Install trench support
RIICFW302A	Install temporary and permanent rock anchors
RIICWD503A	Prepare work zone traffic management plan
RIIOHS202A	Enter and work in confined spaces
RIIOHS205A	Control traffic with stop-slow bat
RIIOHS302A	Implement traffic management plan
RIIWMG203A	Drain and dewater civil construction site
TAEDEL402A	Plan, organise and facilitate learning in the workplace
TLIB3011A	Set up and rig crane for lift
TLIB3013A	Maintain mobile cranes
TLIB3015A	Undertake site inspection
TLIF2006A	Apply accident-emergency procedures
TLIF2010A	Apply fatigue management strategies
TLIF3084A	Follow mobile crane safety procedures

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TLILIC2001A	Licence to operate a forklift truck
TLILIC2005A	Licence to operate a boom-type elevating work platform (boom length 11 meters or more)
TLILIC2016A	Licence to drive heavy rigid vehicle
TLILIC3006A	Licence to operate a non-slewing mobile crane (greater than 3 tonnes capacity)
TLILIC3008A	Licence to operate a slewing mobile crane (up to 20 tonnes)
TLILIC4009A	Licence to operate a slewing mobile crane (up to 60 tonnes)
TLILIC4010A	Licence to operate a slewing mobile crane (up to 100 tonnes)
TLILIC4011A	Licence to operate a slewing mobile crane (over 100 tonnes)
UEENEEE101A	Apply Occupational Health and Safety regulations, codes and practices in the workplace
UEENEEJ102A	Prepare and connect refrigerant tubing and fittings
UEENEEJ105A	Position, assemble and start up single head split air conditioning and water heating heat pump systems
UEENEEJ172A	Recover, pressure test, evacuate, charge and leak test refrigerants – split systems

CPC08 users should go to www.training.gov.au to download any required imported units.

Mapping of CPC08v9 qualifications

Mapping CPC08 Version 9.1 qualifications to Version 9

CPC08 V9.1 code and title	CPC08 V9 code and title	Comments
	CPC50108 Diploma of Building Surveying	Deleted qualification. Deletion of CPC50108 was based on industry advice stemming from significant duplication between units in this Diploma qualification and those in

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CPC08 V9.1 code and title	CPC08 V9 code and title	Comments
		the CPC60115 Advanced Diploma of Building Surveying. CPC60108 was redesigned to accommodate CPC50108 and was released with CPC Version 1 as CPC60115.

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Mapping CPC08 Version 9 qualifications to Version 8

Qualification code and title in Version 9 Training Package	Relationship to qualifications in Version 8	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent

CPC20211 Certificate II in Construction Pathways	CPC20211 Certificate II in Construction Pathways	Revised qualification deemed equivalent to CPC20211
		• minor editorial changes to clarify elective packaging rules, without changing intent
		• elective units updated:
		  • CPCCJN2002A to current equivalent version (CPCCJN2002B Prepare for off-site manufacturing process)
		  • CPCCST2002A to current non-equivalent version (CPCCST2006A Identify and use stone products)
			E

CPC30313 Certificate III in Concreting	CPC30311 Certificate III in Concreting	Revised qualification deemed not equivalent to CPC30311
		• qualification packaging amended:
		  • total number of units required increased from 18 to 20
		  • core units increased from 13 to 14
		  • elective units increased from 5 to 6
		  • core and elective units revised, including replacement with non-equivalent versions and addition of new units
		• pathways information added
			N

CPC30413 Certificate III in Demolition	CPC30411 Certificate III in Demolition	Revised qualification deemed not equivalent to CPC30411 Core and elective units revised resulting in the addition of 11 new units	N

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CPC31912 Certificate III in Joinery	CPC31912 Certificate III in Joinery	Revised qualification deemed equivalent to CPC31912 • elective unit updated: • CPCCJN2002A to current equivalent version (CPCCJN2002B Prepare for off-site manufacturing process) • pathways information added	E

CPC32313 Certificate III in Stonemasonry (Monumental/Installation)	CPC32311 Certificate III in Stonemasonry (Monumental/Installation)	Revised qualification deemed not equivalent to CPC32311
		Qualification packaging amended:
		• composition of core revised:
		  • CPCCCM2005B Use construction tools and equipment added
		  • CPCCST2001A Prepare for stonemasonry construction process deleted
		  • CPCCST2002A revised resulting in non-equivalent CPCCST2006A Identify and use stone products
		  • CPCCST3005A revised resulting in non-equivalent CPCCST3022A Carry out profile work
		• minor change to elective packaging wording, without changing intent
		• elective unit added:
		  • CPCCCM2009A Carry out basic demolition
		• 7 new units rewritten and reinstated into elective pool from previous BCF and BCG Training Packages:
		  • CPCCST3015A Apply gilding to stone
		  • CPCCST3016A Build solid stonemasonry walls
		  • CPCCST3017A Construct stone arches
		  • CPCCST3018A Inlay lead to stone
		  • CPCCST3019A Lay
			N

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		stonemasonry stairs • CPCCST3020A Produce reconstituted stone • CPCCST3021A Renovate and restore stone work • pathways information added	

CPC32413 Certificate III in Plumbing	CPC32412 Certificate III in Plumbing	Revised qualification deemed not equivalent to CPC32412
		Qualification packaging amended:
		• core gas unit CPCPGS3058A replaced with non-equivalent unit CPCPGS3061A Install and commission Type A gas appliances
		• prerequisite unit to CPCCCM2008B (CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry) added to elective streams where CPCCCM2008B appears
		• Water stream elective unit CPCPFS3033A revised to non-equivalent unit CPCPFS3045A Fit off sprinkler heads, controls and ancillary equipment
		• imported units for the purpose of ARC licensing added to the Mechanical Services elective stream:
		  • UEENEEE101A Apply Occupational Health and Safety regulations, codes and practices in the workplace
		  • UEENEEJ102A Prepare and connect refrigerant tubing and fittings
		  • UEENEEJ105A Position, assemble and start up single head split air conditioning and water heating heat pump systems
		  • UEENEEJ172A Recover, pressure test, evacuate, charge and leak test refrigerants – split systems
		• pathways information added
			N

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CPC32513 Certificate III in Plumbing (Mechanical Services)	CPC32512 Certificate III in Plumbing (Mechanical Services)	Revised qualification deemed not equivalent to CPC32512
		Qualification packaging amended:
		• Water stream core requirements changed from 23 to 24 and Water stream elective requirements changed from 7 to 5 (to align to Water stream requirements in CPC32413)
		• Gas Services stream core unit CPCPGS3058A revised to non-equivalent CPCPGS3061A Install and commission Type A gas appliances
		• CPCPWT3020A Connect and install storage tanks to a domestic water supply added as a core unit in Water stream
		• CPCPFS2021A Connect static storage tanks for fixed fire protection systems deleted from Water stream electives
		• Water stream elective unit CPCPFS3033A revised and recoded to CPCPFS3045A Fit off sprinkler heads, controls and ancillary equipment
		• prerequisite unit to CPCCCM2008B (CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry) added to elective streams where CPCCCM2008B appears
		• imported units for the purpose of ARC licensing added to the Mechanical Services elective stream:
		  • UEENEEE101A Apply Occupational Health and Safety regulations, codes and practices in the workplace
		  • UEENEEJ102A Prepare and connect refrigerant tubing and fittings
		  • UEENEEJ105A Position,
			N

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		assemble and start up single head split air conditioning and water heating heat pump systems • UEENEEJ172A Recover, pressure test, evacuate, charge and leak test refrigerants – split systems • pathways information added	
CPC32713 Certificate III in Gas Fitting	CPC32712 Certificate III in Gas Fitting	Revised qualification deemed not equivalent to CPC32712 • core unit CPCPGS3058A revised to non-equivalent CPCPGS3061A Install and commission Type A gas appliances • prerequisite unit to CPCCCM2008B (CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry) added to elective list • pathways information added	N

CPC32813 Certificate III in Fire Protection	CPC32812 Certificate III in Fire Protection	Revised qualification deemed not equivalent to CPC32812
		• four core units revised resulting in non-equivalence and changes to codes:
		  • CPCPFS3044A Install distribution and range pipes
		  • CPCPFS3045A Fit off sprinkler heads, controls and ancillary equipment
		  • CPCPFS3046A Test the integrity of water-based fire protection systems using pressure
		  • CPCPFS3047A Test and maintain automatic fire sprinklers
		• two new units added to elective pool:
		  • CPCPFS3048A Install fixed fire pumpsets
		  • CPCPFS3049A Conduct preventive maintenance on fixed fire pumpsets
			N

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		• pathways information added	

CPC40110 Certificate IV in Building and Construction (Building)	CPC40110 Certificate IV in Building and Construction (Building)	Revised qualification deemed equivalent to CPC40110
		• two new sustainability elective units added:
		  • CPCSUS4002A Use building science principles to construct energy efficient buildings
		  • CPCSUS4003A Maximise energy efficiency through applied trade skills
		• imported elective units updated
		• minor editorial changes to elective packaging rules, without changing intent
			E

CPC40508 Certificate IV in Building and Construction (Site Management)	CPC40508 Certificate IV in Building and Construction (Site Management)	Revised qualification deemed equivalent to CPC40508 • new concreting unit added the elective pool (CPCCCO4001A Supervise concreting work) • imported elective unit BSBPMG510A updated to current version (BSBPMG522A Undertake project work) • minor editorial changes to elective packaging rules, without changing intent • pathways information added	E

CPC40912 Certificate IV in Plumbing and Services	CPC40912 Certificate IV in Plumbing and Services	Revised qualification deemed equivalent to CPC40912
		• one new elective unit added to the fire services stream (CPCPFS4027A Commission fire sprinkler systems)
		• elective units updated to equivalent versions:
		  • CPCPGS4011C Design and size consumer gas installations
		  • CPCPGS4023B Install, commission and service Type B
			E

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		gas appliances • imported elective unit BSBPMG510A updated to current version (BSBPMG522A Undertake project work)	
CPC41013 Certificate IV in Demolition		New qualification	

CPC50210 Diploma of Building and Construction (Building)	CPC50210 Diploma of Building and Construction (Building)	Revised qualification deemed equivalent to CPC50210
		• two new sustainability elective units added:
		  • CPCSUS5002A Develop action plans to retrofit existing buildings for energy efficiency
		  • CPCSUS5003A Manage energy efficient building methods and strategies
		• minor editorial changes to elective packaging rules, without changing intent
			E

CPC50612 Diploma of Hydraulic Services Design	CPC50612 Diploma of Hydraulic Services Design	Revised qualification deemed equivalent to CPC50612 • elective unit CPCPGS4011C Design and size consumer gas installations updated to equivalent version	E

No other CPC qualifications were added, changed or deleted as a result of the changes made in Version 9.

Mapping of CPC08v8 qualifications

Mapping CPC08 Version 8 qualifications to Version 7

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Qualification code and title in Version 8 Training Package	Relationship to qualifications in Version 7	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
CPC10111 Certificate I in Construction	CPC10111 Certificate I in Construction	Revised qualification deemed equivalent to CPC10111 Addition of CPCCCM1016A to elective pool Core and elective units revised resulting in a number of unit identifier changes	E
CPC20112 Certificate II in Construction	CPC20111 Certificate II in Construction	Revised qualification deemed not equivalent to CPC20111 Qualification packaging amended: • same total number of units, but core units required increased by one and elective units reduced with the move of CPCCCM2010B from elective to core • change in options regarding choice of elective units • elective unit grouping changed resulting in deletion of some elective units Elective units revised resulting in a number of unit identifier changes	N
CPC20211 Certificate II in Construction Pathways	CPC20211 Certificate II in Construction Pathways	Revised qualification deemed equivalent to CPC20211 Change to the packaging rules regarding choice of	E

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		electives to allow the choice to extend beyond CPC08, increasing the qualification's flexibility Elective units revised resulting in a number of changes to unit identifier	
Deleted qualification	CPC20311 Certificate II in Steelfixing		
Deleted qualification	CPC20411 Certificate II in Concreting		
Deleted qualification	CPC20511 Certificate II in Stoneworking		
CPC20712 Certificate II in Drainage	CPC20711 Certificate II in Drainage	Revised qualification deemed not equivalent to CPC20711 Qualification packaging amended – same number of core and elective units required – but changed core units: • CPCPCM2050A moved from core to elective • CPCPDR3021A moved from elective to core • native CPC08 first aid unit (CPCPCM2011A) replaced with imported HLT07 unit (HLTFA211A) A number of core and elective units replaced with updated versions	N
CPC20812 Certificate II in Metal Roofing and Cladding	CPC20811 Certificate II in Metal Roofing and Cladding	Revised qualification deemed not equivalent to CPC20811 A number of core and elective units replaced	N

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		with updated versions Change to core unit: • native CPC08 first aid unit (CPCPCM2011A) replaced with imported HLT07 unit (HLTFA211A)	
CPC20912 Certificate II in Urban Irrigation	CPC20911 Certificate II in Urban Irrigation	Revised qualification deemed not equivalent to CPC20911 Guidance included in the packaging rules regarding options in choice of electives A number of core and elective units replaced with updated versions Change to core unit: • native CPC08 first aid unit (CPCPCM2011A) replaced with imported HLT07 unit (HLTFA211A)	N
CPC30111 Certificate III in Bricklaying/Blocklaying	CPC30111 Certificate III in Bricklaying/Blocklaying	Revised qualification deemed equivalent to CPC30111 Core and elective units revised resulting in a number of unit identifier changes	E
CPC30211 Certificate III in Carpentry	CPC30211 Certificate III in Carpentry	Revised qualification deemed equivalent to CPC30211 Core and elective units revised resulting in a number of unit identifier changes	E
CPC30311 Certificate III in Concreting	CPC30311 Certificate III in Concreting	Revised qualification deemed equivalent to	E

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		CPC30311 Core and elective units revised resulting in a number of unit identifier changes CPCCCM2011A removed from elective pool but not replaced with non-equivalent revised version (CPCCCM1016A)	
CPC30411 Certificate III in Demolition	CPC30411 Certificate III in Demolition	Revised qualification deemed equivalent to CPC30411 Core and elective units revised resulting in a number of unit identifier changes Some elective imported units replaced with updated versions	E
CPC30511 Certificate III in Dogging	CPC30511 Certificate III in Dogging	Revised qualification deemed equivalent to CPC30511 Elective units revised resulting in a number of unit identifier changes Elective imported unit replaced with updated version	E
CPC30611 Certificate III in Painting and Decorating	CPC30611 Certificate III in Painting and Decorating	Revised qualification deemed equivalent to CPC30611 Core and elective units revised resulting in a number of unit identifier changes	E
CPC30711 Certificate III in Rigging	CPC30711 Certificate III in Rigging	Revised qualification deemed equivalent to CPC30711 Core and elective units	E

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		revised resulting in a number of unit identifier changes Elective imported unit replaced with updated version Change to elective units list: • CPCCLDG3001A Licence to perform dogging added to elective unit list to correct its omission from the packaging rules, given its status as prerequisite to CPCCLRG3001A	
CPC30812 Certificate III in Roof Tiling	CPC30811 Certificate III in Roof Tiling	Revised qualification deemed not equivalent to CPC30811 Change to core units: • CPCPCM2023A revised and not equivalent to CPCPCM2043A • CPCPCM2035A revised and not equivalent to CPCPCM2055A Core and elective units revised resulting in a number of unit identifier changes	N
CPC30911 Certificate III in Scaffolding	CPC30911 Certificate III in Scaffolding	Revised qualification deemed equivalent to CPC30911 Elective units revised resulting in a number of unit identifier changes Elective imported unit replaced with updated version	E

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CPC31011 Certificate III in Solid Plastering	CPC31011 Certificate III in Solid Plastering	Revised qualification deemed equivalent to CPC31011 Core and elective units revised resulting in a number of unit identifier changes	E
CPC31111 Certificate III in Steelfixing	CPC31111 Certificate III in Steelfixing	Revised qualification deemed equivalent to CPC31111 Core and elective units revised resulting in a number of unit identifier changes Elective unit CPCPCM2033A revised and not equivalent to CPCPCM2053A	E
CPC31211 Certificate III in Wall and Ceiling Lining	CPC31211 Certificate III in Wall and Ceiling Lining	Revised qualification deemed equivalent to CPC31211 Core and elective units revised resulting in a number of unit identifier changes	E
CPC31311 Certificate III in Wall and Floor Tiling	CPC31311 Certificate III in Wall and Floor Tiling	Revised qualification deemed equivalent to CPC31311 Core and elective units revised resulting in a number of unit identifier changes	E
CPC31411 Certificate III in Construction Waterproofing	CPC31411 Certificate III in Construction Waterproofing	Revised qualification deemed equivalent to CPC31411 Elective units revised resulting in a number of unit identifier changes	E
CPC31511 Certificate III in Formwork/Falsework	CPC31511 Certificate III in Formwork/Falsework	Revised qualification deemed equivalent to	E

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		CPC31511 Core and elective units revised resulting in a number of unit identifier changes	
CPC31611 Certificate III in Paving	CPC31611 Certificate III in Paving	Revised qualification deemed equivalent to CPC31611 Core and elective units revised resulting in a number of unit identifier changes	E
Deleted qualification	CPC31711 Certificate III in Low Rise Structural Framing		
CPC31712 Certificate III in Post-Tensioning		New qualification	
CPC31812 Certificate III in Shopfitting	CPC31811 Certificate III in Shopfitting	Revised qualification deemed not equivalent to CPC31811 Core and elective units revised resulting in a number of unit identifier changes Change to core unit: • CPCCSH3004A revised and not equivalent to CPCCSH3006A	N
CPC31912 Certificate III in Joinery	CPC31911 Certificate III in Joinery	Revised qualification deemed not equivalent to CPC31911 Change to core unit: • CPCCCA3023A deleted and replaced with non-equivalent unit CPCCCM2006B Change to elective unit: • CPCCSH3004A	N

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		revised and not equivalent to CPCCSH3006A Core units revised resulting in a number of unit identifier changes	
CPC32011 Certificate III in Carpentry and Joinery	CPC32011 Certificate III in Carpentry and Joinery	Revised qualification deemed equivalent to CPC32011 Core and elective units revised resulting in a number of unit identifier changes	E
CPC32111 Certificate III in Signage	CPC32111 Certificate III in Signage	Revised qualification deemed equivalent to CPC32111 Elective units revised resulting in a number of unit identifier changes Elective imported unit replaced with updated version New elective units added: • CPCCSI3015A • CPCCSI3016A	E
CPC32211 Certificate III in Joinery (Stairs)	CPC32211 Certificate III in Joinery (Stairs)	Revised qualification deemed equivalent to CPC32211 Core and elective units revised resulting in a number of unit identifier changes Change to elective unit: • CPCCSH3004A revised but deemed not equivalent to CPCCSH3006A	E
CPC32311 Certificate III in Stonemasonry (Monumental/Installation	CPC32311 Certificate III in Stonemasonry (Monumental/Installation)	Revised qualification deemed equivalent to CPC32311	E

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)		Core and elective units revised resulting in a unit identifier change to elective unit	

CPC32412 Certificate III in Plumbing	CPC32411 Certificate III in Plumbing	Revised qualification deemed not equivalent to CPC32411
		Change to core units in all streams, including:
		• a number of units replaced with updated versions
		• water stream:
		  • CPCPCM2011A replaced with imported unit HLTFA211A
		• gas services stream:
		  • new unit CPCPGS3047A added
		  • CPCPGS3017A deleted
		Change to elective units:
		• native and imported units replaced with updated versions
		• new unit CPCPWT3030A added to water stream
		Core and elective units revised resulting in a number of unit identifier changes
			N

CPC32512 Certificate III in Plumbing (Mechanical Services)	CPC32511 Certificate III in Plumbing (Mechanical Services)	Revised qualification deemed not equivalent to CPC32511 Change to core units in all streams, including: • a number of units replaced with	N

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		updated versions
		• water stream:
		  • CPCPCM2011A replaced with imported unit HLTFA211A
		• gas services stream:
		  • new unit CPCPGS3047A added
		  • CPCPGS3017A deleted
		Change to elective units:
		• native and imported units replaced with updated versions
		• new unit CPCPWT3030A added to water stream
		Core and elective units revised resulting in a number of unit identifier changes	

CPC32612 Certificate III in Roof Plumbing	CPC32611 Certificate III in Roof Plumbing	Revised qualification deemed not equivalent to CPC32611 Change to core units: • a number of units replaced with updated versions • a number of units revised resulting in unit identifier changes • CPCPCM2011A replaced with imported unit HLTFA211A Change to elective units: • a number of units replaced with updated versions	N

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CPC32712 Certificate III in Gas Fitting	CPC32711 Certificate III in Gas Fitting	Revised qualification deemed not equivalent to CPC32711 Change to core units: • a number of units replaced with updated versions CPCPCM2011A replaced with imported unit HLTFA211A • new unit CPCPGS3047A added • CPCPGS3017A deleted Change to elective units: • a number of units replaced with updated versions • several units revised resulting in unit identifier changes	N
CPC32812 Certificate III in Fire Protection	CPC32811 Certificate III in Fire Protection	Revised qualification deemed not equivalent to CPC32811 Change to core units: • a number of units replaced with updated versions • CPCPCM2011A replaced with imported unit HLTFA211A • PRMFES units replaced with CPPFES units Change to elective units: • CPPCMN2002A Participate in workplace safety arrangements and CPPFES2006A	N

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		Prepare for installation and servicing operations added to elective unit list to correct their omission from the packaging rules, given their status as prerequisite to CPCPFS3040A, CPCPFS3041A, CPCPFS3042A and CPCPFS3043A • new unit CPCPWT3030A added to water stream • a number of units replaced with updated versions • several units revised resulting in unit identifier changes	
CPC32912 Certificate III in Construction Crane Operations		New qualification	
CPC40110 Certificate IV in Building and Construction (Building)	CPC40110 Certificate IV in Building and Construction (Building)	Revised qualification deemed equivalent to CPC40110 Core and elective units revised resulting in a number of unit identifier changes	E
CPC40208 Certificate IV in Building and Construction (Contract Administration)	CPC40208 Certificate IV in Building and Construction (Contract Administration)	Revised qualification deemed equivalent to CPC40208 Core and elective units revised resulting in a number of unit identifier changes	E
CPC40308 Certificate IV in Building and Construction	CPC40308 Certificate IV in Building and Construction (Estimating)	Revised qualification deemed equivalent to CPC40308	E

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(Estimating)		Core and elective units revised resulting in a number of unit identifier changes	
CPC40408 Certificate IV in Building and Construction (Sales)	CPC40408 Certificate IV in Building and Construction (Sales)	Revised qualification deemed equivalent to CPC40408 Core and elective units revised resulting in a number of unit identifier changes	E
CPC40508 Certificate IV in Building and Construction (Site Management)	CPC40508 Certificate IV in Building and Construction (Site Management)	Revised qualification deemed equivalent to CPC40508 Core and elective units revised resulting in a number of unit identifier changes	E
CPC40611 Certificate IV in Building and Construction (Specialist Trades)	CPC40611 Certificate IV in Building and Construction (Specialist Trades)	Revised qualification deemed equivalent to CPC40611 Core and elective units revised resulting in a number of unit identifier changes Addition of the following units to elective unit list to correct their omission from the packaging rules, given their status as prerequisite to CPCCLRG4001A and CPCCLSF4001A respectively: • CPCCLRG3002A Licence to perform rigging intermediate level • CPCCLSF3001A Licence to erect, alter and dismantle scaffolding	E

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		intermediate level	
CPC40708 Certificate IV in Building and Construction (Trade Contracting)	CPC40708 Certificate IV in Building and Construction (Trade Contracting)	Revised qualification deemed equivalent to CPC40708 Core and elective units revised resulting in a number of unit identifier changes	E
CPC40808 Certificate IV in Swimming Pool and Spa Building	CPC40808 Certificate IV in Swimming Pool and Spa Building	Revised qualification deemed equivalent to CPC40808 Core and elective units revised resulting in a number of unit identifier changes	E
CPC40912 Certificate IV in Plumbing and Services	CPC40911 Certificate IV in Plumbing and Services	Revised qualification deemed not equivalent to CPC40911 Core and elective units replaced with updated version Core and elective units revised resulting in a number of unit identifier changes	N
CPC50108 Diploma of Building Surveying	CPC50108 Diploma of Building Surveying	Revised qualification deemed equivalent to CPC50108 Imported units updated to current version	E
CPC50210 Diploma of Building and Construction (Building)	CPC50210 Diploma of Building and Construction (Building)	Revised qualification deemed equivalent to CPC50210 Elective units revised resulting in a number of unit identifier changes	E
CPC50308 Diploma of Building and Construction (Management)	CPC50308 Diploma of Building and Construction (Management)	Revised qualification deemed equivalent to CPC50308 Elective units revised	E

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		resulting in a number of unit identifier changes	
CPC50412 Diploma of Plumbing and Services	CPC50408 Diploma of Plumbing and Services	Revised qualification deemed not equivalent to CPC50408 A number of core and elective units updated and deemed not equivalent to previous version Elective units revised resulting in a number of unit identifier changes	N
CPC50509 Diploma of Fire Systems Design	CPC50509 Diploma of Fire Systems Design	Revised qualification deemed equivalent to CPC50509 A number of elective units updated and deemed not equivalent to previous version Elective units revised resulting in a number of unit identifier changes	E
CPC50612 Diploma of Hydraulic Services Design	CPC50611 Diploma of Hydraulic Services Design	Revised qualification deemed not equivalent to CPC50611 Change to core units: • CPCPFS5000A deleted and replaced with CPCSFS5001A • CPCPFS5002A deleted and replaced with CPCSFS5007A Core and elective units revised resulting in a number of unit identifier changes	N
CPC60108 Advanced Diploma of Building Surveying	CPC60108 Advanced Diploma of Building Surveying	Revised qualification deemed equivalent to CPC60108 Imported units updated	E

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		to current version	
CPC60212 Advanced Diploma of Building and Construction (Management)	CPC60208 Advanced Diploma of Building and Construction (Management)	Revised qualification deemed not equivalent to CPC60208 Change to core unit: • CPCCBC6004A deleted and replaced with CPCCBC6018A Core and elective units revised resulting in a number of unit identifier changes	N
CPC70109 Vocational Graduate Certificate in Fire Systems Design Management	CPC70109 Vocational Graduate Certificate in Fire Systems Design Management	No change	E

Mapping of CPC08v7 qualifications

Mapping CPC08 Version 7 qualifications to Version 6.1

Qualification code and title in Version 7 Training Package	Relationship to qualifications in Version 6.1	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
CPC30411 Certificate III in Demolition	CPC30411 Certificate III in Demolition	Two new CPC08 units added to the list of elective units: • CPCCDE3014A Remove non-friable asbestos • CPCCDE3015A Remove friable asbestos. CPCCOHS1001A Work safely in the construction industry also added to the elective bank given its prerequisite status in those	E

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		units. CPCCDE3012A Encapsulate and remove asbestos deleted from elective list in qualification.	
CPC40110 Certificate IV in Building and Construction (Building)	CPC40110 Certificate IV in Building and Construction (Building)	One new CPC08 unit added to the list of elective units: • CPCCBC4051A Supervise asbestos removal. CPCCOHS1001A Work safely in the construction industry also added to the elective bank given its prerequisite status in that unit. CPCCBC4023A Plan and undertake site inspection and assessment of asbestos products and materials deleted from elective list in qualification.	E
CPC40308 Certificate IV in Building and Construction (Estimating)	CPC40308 Certificate IV in Building and Construction (Estimating)	One new CPC08 unit added to the list of elective units: • CPCCBC4051A Supervise asbestos removal. CPCCOHS1001A Work safely in the construction industry also added to the elective bank given its prerequisite status in that unit. CPCCBC4023A Plan and undertake site inspection and assessment of asbestos products and materials deleted from elective list in qualification.	E
CPC40508 Certificate IV in Building and	CPC40508 Certificate IV in Building and Construction (Site	One new CPC08 unit added to the list of elective units: • CPCCBC4051A	E

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Construction (Site Management)	Management)	Supervise asbestos removal. CPCCOHS1001A Work safely in the construction industry also added to the elective bank given its prerequisite status in that unit. CPCCBC4023A Plan and undertake site inspection and assessment of asbestos products and materials deleted from elective list in qualification.	
CPC40611 Certificate IV in Building and Construction (Specialist Trades)	CPC40611 Certificate IV in Building and Construction (Specialist Trades)	One new CPC08 unit added to the list of elective units: • CPCCBC4051A Supervise asbestos removal. CPCCOHS1001A Work safely in the construction industry also added to the elective bank given its prerequisite status in that unit. CPCCBC4023A Plan and undertake site inspection and assessment of asbestos products and materials deleted from elective list in qualification.	E
CPC40708 Certificate IV in Building and Construction (Trade Contracting)	CPC40708 Certificate IV in Building and Construction (Trade Contracting)	One new CPC08 unit added to the list of elective units: • CPCCBC4051A Supervise asbestos removal CPCCOHS1001A Work safely in the construction industry also added to the elective bank given its prerequisite status in that unit. CPCCBC4023A Plan and	E

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		undertake site inspection and assessment of asbestos products and materials deleted from elective list in qualification.	
CPC40808 Certificate IV in Swimming Pool and Spa Building	CPC40808 Certificate IV in Swimming Pool and Spa Building	One new CPC08 unit added to the list of elective units: • CPCCBC4051A Supervise asbestos removal. CPCCOHS1001A Work safely in the construction industry also added to the elective bank given its prerequisite status in that unit. CPCCBC4023A Plan and undertake site inspection and assessment of asbestos products and materials deleted from elective list in qualification.	E
CPC50210 Diploma of Building and Construction (Building)	CPC50210 Diploma of Building and Construction (Building)	One new CPC08 unit added to the list of elective units: • CPCCBC5014A Conduct asbestos assessment associated with removal. CPCCOHS1001A Work safely in the construction industry also added to the elective bank given its prerequisite status in that unit.	E

Mapping of CPC08v6 qualifications

Mapping of CPC08 Version 6.1 to Version 6

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Qualification code and title **in Version 6.1 Training Package**	**Relationship to qualifications in Version 6**	**Comments in relation to previous version of this Training Package**	**Equivalent/ Not equivalent**
CPC32411 Certificate III in Plumbing	CPC32411 Certificate III in Plumbing	Re-coded the following units in response to stakeholder implementation advice with regard to the use of previous version unit codes: • CPCPGS3031A Install gas piping systems • CPCPGS3032A Size consumer gas piping systems • CPCPGS3033A Install and commission Type A gas appliances • CPCPGS3034A Install LPG storage of aggregate storage capacity up to 500 litres • CPCPGS3035A Install LPG storage of aggregate storage capacity exceeding 500 litres and less than 8KL.	E
CPC32511 Certificate III in Plumbing (Mechanical Services)	CPC32511 Certificate III in Plumbing (Mechanical Services)	Re-coded the following units in response to stakeholder implementation advice with regard to the use of previous version unit codes: • CPCPGS3031A Install gas piping systems • CPCPGS3032A Size consumer gas piping systems	E

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Qualification code and title **in Version 6.1 Training Package**	**Relationship to qualifications in Version 6**	**Comments in relation to previous version of this Training Package**	**Equivalent/ Not equivalent**
		• CPCPGS3033A Install and commission Type A gas appliances • CPCPGS3034A Install LPG storage of aggregate storage capacity up to 500 litres • CPCPGS3035A Install LPG storage of aggregate storage capacity exceeding 500 litres and less than 8KL.	
CPC32711 Certificate III in Gas Fitting	CPC32711 Certificate III in Gas Fitting	Corrected qualification, removing erroneous listing in the elective pool of the unit CPCPCM2032A Weld using oxy-acetylene equipment and relocating it to its originally intended core pool location Packaging rules not altered Re-coded the following units in response to stakeholder implementation advice with regard to the use of previous version unit codes: • CPCPGS3031A • CPCPGS3032A • CPCPGS3033A • CPCPGS3034A • CPCPGS3035A	E

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Qualification code and title in Version 6.1 Training Package	Relationship to qualifications in Version 6	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent

No other CPC qualifications were added or changed in Version 6.1.

Mapping of CPC08 Version 6 qualifications to Version 5

Qualification code and title in Version 6 Training Package	Relationship to qualifications in Version 5	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
CPC10111 Certificate I in Construction	CPC10108 Certificate I in Construction	Revised qualification, not deemed equivalent to CPC10108 Overall number of units required for qualification increased from 10 to 11 to reflect increase of core units from 7 to 8 (CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry) Prerequisite unit requirement in a number of core units removed	N
CPC20111 Certificate II in Construction	CPC20108 Certificate II in Construction	Revised qualification, not deemed equivalent to CPC20108 Prerequisite unit changed from CPCCOHS1001A to CPCCOHS2001A in core unit CPCCCO2013A Carry out concreting to simple forms Prerequisite unit requirement in a number of core units removed Units added to elective pool Imported units upgraded to	N

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		more recent version	
CPC20211 Certificate II in Construction Pathways	CPC20208 Certificate II in Construction Pathways	Revised qualification, not deemed equivalent to CPC20208 Prerequisite unit requirement in a number of core units removed Unit added to elective bank (CPCCCO2013A Carry out concreting to simple forms) Imported units upgraded to more recent version	N
CPC20311 Certificate II in Steelfixing	CPC20308 Certificate II in Steelfixing	Revised qualification, not deemed equivalent to CPC20308 Prerequisite unit requirement in a number of core units removed Imported units upgraded to more recent version	N
CPC20411 Certificate II in Concreting	CPC20408 Certificate II in Concreting	Revised qualification, not deemed equivalent to CPC20408 Prerequisite unit changed from CPCCOHS1001A to CPCCOHS2001A in a number of core units Prerequisite unit requirement in a number of core units removed Imported units upgraded to more recent version	N
CPC20511 Certificate II in Stoneworking	CPC20508 Certificate II in Stoneworking	Revised qualification, not deemed equivalent to CPC20508 Prerequisite unit changed from CPCCOHS1001A to CPCCOHS2001A in core unit CPCCCO2013A Carry out concreting to simple forms	N

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		Prerequisite unit requirement in a number of core units removed Imported units upgraded to more recent version	
CPC20711 Certificate II in Drainage	CPC20708 Certificate II in Drainage	Revised qualification, not deemed equivalent to CPC20708 New unit CPCPCM2023A in core replacing CPCPCM2003A Prerequisite unit requirements upgraded to new units Imported units upgraded to more recent version	N
CPC20811 Certificate II in Metal Roofing and Cladding	CPC20808 Certificate II in Metal Roofing and Cladding	Revised qualification, not deemed equivalent to CPC20808 CPCCCM2010A added as additional core unit, taking number of required core units from 14 to 15, with overall number of required units remaining the same New unit CPCPCM2023A in core replacing CPCPCM2003A Prerequisite unit requirements removed from one unit Prerequisite unit requirements upgraded to new units New unit added to elective pool (CPPFES2006A) Imported units upgraded to more recent version	N
CPC20911 Certificate II in Urban Irrigation	CPC20908 Certificate II in Urban Irrigation	Revised qualification, not deemed equivalent to CPC20908 New unit CPCPCM2023A in core replacing CPCPCM2003A Prerequisite	N

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		unit requirements upgraded to new units Imported units upgraded to more recent version	
CPC30111 Certificate III in Bricklaying/ Blocklaying	CPC30108 Certificate III in Bricklaying/ Blocklaying	Revised qualification, not deemed equivalent to CPC30108 Prerequisite unit requirement in a number of core units removed Units added to elective pool	N
CPC30211 Certificate III in Carpentry	CPC30208 Certificate III in Carpentry	Revised qualification, not deemed equivalent to CPC30208 Prerequisite unit requirement added to CPCCCA2011A core unit Prerequisite unit requirement in a number of core units removed Imported units upgraded to more recent version	N
CPC30311 Certificate III in Concreting	CPC30308 Certificate III in Concreting	Revised qualification, not deemed equivalent to CPC30308 Prerequisite unit changed from CPCCOHS1001A to CPCCOHS2001A in a number of core units Prerequisite unit requirement in a number of core units removed Imported units upgraded to more recent version	N
CPC30411 Certificate III in Demolition	CPC30408 Certificate III in Demolition	Revised qualification, not deemed equivalent to CPC30408 Prerequisite unit changed from CPCCOHS1001A to CPCCOHS2001A in a	N

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		number of core units Prerequisite unit requirement in a number of core units removed Imported units upgraded to more recent version	
CPC30511 Certificate III in Dogging	CPC30508 Certificate III in Dogging	Revised qualification, not deemed equivalent to CPC30508 Overall number of units required for qualification reduced from 15 to 13 to reflect change of two dogging units (CPCCDO2011A and CPCCDO3011A) from core to elective; reducing number of core units from 11 to 9 Prerequisite unit requirement in a number of core units removed Units added to elective pool Imported units upgraded to more recent version	N
CPC30611 Certificate III in Painting and Decorating	CPC30608 Certificate III in Painting and Decorating	Revised qualification, not deemed equivalent to CPC30608 Prerequisite unit changed from CPCCOHS1001A to CPCCOHS2001A in most CPCCPD core and elective units Prerequisite unit requirement in a number of core units removed A prerequisite unit requirement added to CPCCPD3034A elective unit Imported units upgraded to more recent version	N
CPC30711 Certificate III in Rigging	CPC30708 Certificate III in Rigging	Revised qualification, not deemed equivalent to	N

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		CPC30708 Core units reduced from 14 to 11 and overall units required for qualification reduced from 18 to 15, to reflect: removal of two non-licensing rigging units (CPCCRI3012A and CPCCRI3013A) from core to elective removal of two dogging units (CPCCDO3011A and CPCCDO3012A) from the qualification addition of CPCCCM2010A Work safely at heights to core Prerequisite unit changed from CPCCOHS1001A to CPCCOHS2001A in several core units Prerequisite unit requirement in a number of core units removed Imported units upgraded to more recent version	
CPC30811 Certificate III in Roof Tiling	CPC30808 Certificate III in Roof Tiling	Revised qualification, not deemed equivalent to CPC30808 Prerequisite unit requirement in a number of core units removed Addition of CPCPCM2023A to core Overall number of units required for qualification remains at 17, with the core increased by one unit and the electives reduced by one unit	N
CPC30911 Certificate III in Scaffolding	CPC30908 Certificate III in Scaffolding	Revised qualification, not deemed equivalent to CPC30908 Overall number of units required for qualification	N

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		reduced from 15 to 13 to reflect change from core to elective of two scaffolding units (CPCCSC2002A and CPCCSC3001A); reducing number of core units from 11 to 9 Prerequisite unit requirement in a number of core units removed Units added to and removed from elective pool Imported units upgraded to more recent version	
CPC31011 Certificate III in Solid Plastering	CPC31008 Certificate III in Solid Plastering	Revised qualification, not deemed equivalent to CPC31008 Prerequisite unit requirement in a number of core units removed Units added to elective pool Clarification of the packaging rules to confirm the requirement to complete 5 elective units	N
CPC31111 Certificate III in Steelfixing	CPC31108 Certificate III in Steelfixing	Revised qualification, not deemed equivalent to CPC31108 Prerequisite unit requirement in a number of core units removed Imported units upgraded to more recent version	N
CPC31211 Certificate III in Wall and Ceiling Lining	CPC31208 Certificate III in Wall and Ceiling Lining	Revised qualification, not deemed equivalent to CPC31208 Prerequisite unit requirement in a number of core units removed	N
CPC31311 Certificate III in Wall and Floor	CPC31308 Certificate III	Revised qualification, not deemed equivalent to	N

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Tiling	in Wall and Floor Tiling	CPC31308 Prerequisite unit requirement in a number of core units removed Units added to elective pool	
CPC31411 Certificate III in Construction Waterproofing	CPC31408 Certificate III in Construction Waterproofing	Revised qualification, not deemed equivalent to CPC31408 Prerequisite unit requirement in a number of core units removed Units added to elective pool	N
CPC31511 Certificate III in Formwork/Falsework	CPC31508 Certificate III in Formwork/Falsework	Revised qualification, not deemed equivalent to CPC31508 Prerequisite unit changed from CPCCOHS1001A to CPCCOHS2001A in a number of core units Prerequisite unit requirement in a number of core units removed Imported units upgraded to more recent version	N
CPC31611 Certificate III in Paving	CPC31608 Certificate III in Paving	Revised qualification, not deemed equivalent to CPC31608 Prerequisite unit changed from CPCCOHS1001A to CPCCOHS2001A in CPCCCO2013A Carry out concreting to simple forms core unit Prerequisite unit requirement in a number of core units removed Imported units upgraded to more recent version	N
CPC31711 Certificate III in Low Rise	CPC31708 Certificate III in Low Rise Structural	Revised qualification, not deemed equivalent to	N

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Structural Framing	Framing	CPC31708 Prerequisite unit changed from CPCCOHS1001A to CPCCOHS2001A in CPCCCO2013A Carry out concreting to simple forms core unit Prerequisite unit requirement added to one Version 5 core unit Prerequisite unit requirement in a number of core units removed Imported units upgraded to more recent version	
CPC31811 Certificate III in Shopfitting	CPC31808 Certificate III in Shopfitting	Revised qualification, not deemed equivalent to CPC31808 Prerequisite unit requirement in a number of core units removed Units added to elective pool Imported units upgraded to more recent version	N
CPC31911 Certificate III in Joinery	CPC31908 Certificate III in Joinery	Revised qualification, not deemed equivalent to CPC31908 Prerequisite unit requirement added to CPCCCA2011A Handle carpentry materials core unit Prerequisite unit requirement in a number of core units removed	N
CPC32011 Certificate III in Carpentry and Joinery	CPC32008 Certificate III in Carpentry and Joinery	Revised qualification, not deemed equivalent to CPC32008 Overall number of units required for qualification remain unchanged, but core units changed from 27 to 28:	N

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		4 CA units added (CPCCCA3010A, CPCCCA3013A, CPCCCA3017A and CPCCCA3019A) CPCCCM2002A, CPCCJN3002A and CPCCSH3001A moved from core to elective Prerequisite unit changed from CPCCOHS1001A to CPCCOHS2001A in CPCCCO2013A Carry out concreting to simple forms core unit Prerequisite unit requirement added to CPCCCA2011A Handle carpentry materials5 core unit Prerequisite unit requirement in a number of core units removed Imported units upgraded to more recent version	
CPC32111 Certificate III in Signage	CPC32108 Certificate III in Signage	Revised qualification, not deemed equivalent to CPC32108 Prerequisite unit requirement in a number of core units removed Imported units upgraded to more recent version	N
CPC32211 Certificate III in Joinery (Stairs)	CPC32208 Certificate III in Joinery (Stairs)	Revised qualification, not deemed equivalent to CPC32208 Prerequisite unit requirement added to several core units Prerequisite unit requirement in a number of core units removed	N
CPC32311 Certificate	CPC32308 Certificate III	Revised qualification, not	N

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III in Stonemasonry (Monumental/Installation)	in Stonemasonry (Monumental/Installation)	deemed equivalent to CPC32308 Prerequisite unit changed from CPCCOHS1001A to CPCCOHS2001A in CPCCCO2013A Carry out concreting to simple forms core unit Changes to JN units in elective bank as follows: • CPCCJN2010A Maintain inventory and control stock: unit deleted • CPCCJN2013A Assemble components: error in digit code of unit corrected to accurate listing of CPCCJN2001A • CPCCJN2012A Package manufactured products for transport: error in digit code of unit corrected to accurate listing of CPCCJN2003A Prerequisite unit requirement in a number of core units removed Units added to elective pool	
CPC32411 Certificate III in Plumbing	CPC32408 Certificate III in Plumbing	Revised qualification, not deemed equivalent to CPC32408 Changes to water stream packaging rules with no change to overall number of units required for qualification: • new unit (CPCPWT3010A) added to core unit requirements, increasing number required from 23 to 24 • elective unit requirement reduced by 1 unit to 5	N

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		New unit CPCPCM2023A in core replacing CPCPCM2003APrerequisite unit changed from CPCPCM2003A to CPCPCM2023A in core units Prerequisite unit requirement in a number of core units removed Units added to and deleted from elective pool Imported units upgraded to more recent version	
CPC32511 Certificate III in Plumbing (Mechanical Services)	CPC32508 Certificate III in Plumbing (Mechanical Services	Revised qualification, not deemed equivalent to CPC32508 New unit CPCPCM2023A in core replacing CPCPCM2003APrerequisite unit changed from CPCPCM2003A to CPCPCM2023A in core units Prerequisite unit requirement in a number of core units removed Changes to water stream packaging rules with no change to overall number of units required for qualification: • CPCPFS3017A removed from core and unit core requirement reduced by 1 from 24 to 23 • CPCPFS3017A added to elective pool unit elective requirement increased by 1 from 6 to 7 Units added to elective pool Imported units upgraded to more recent version	N
CPC32611 Certificate	CPC32608 Certificate III	Revised qualification, not	N

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III in Roof Plumbing	in Roof Plumbing	deemed equivalent to CPC32608 Core units required for qualification increased by one to reflect addition to core of CPCCCM2010A Work safely at heights No change to overall number of units required for qualification New unit CPCPCM2023A in core replacing CPCPCM2003APrerequisite unit changed from CPCPCM2003A to CPCPCM2023A in core units Units added to and removed from elective pool Imported units upgraded to more recent version	
CPC32711 Certificate III in Gas Fitting	CPC32708 Certificate III in Gas Fitting	Revised qualification, not deemed equivalent to CPC32708 New unit CPCPCM2023A in core replacing CPCPCM2003APrerequisite unit changed from CPCPCM2003A to CPCPCM2023A in core units Prerequisite units removed from one core unit in qualification Units added to and removed from elective pool Imported units upgraded to more recent version	N
CPC32811 Certificate III in Fire Protection	CPC32808 Certificate III in Fire Protection	Revised qualification, not deemed equivalent to CPC32808 Total number of units required for qualification increased from 33 to 37 to	N

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		allow for an increase in elective units required New unit CPCPCM2023A in core replacing CPCPCM2003APrerequisite unit changed from CPCPCM2003A to CPCPCM2013A in Version 5 core units Prerequisite units removed from core units in qualification Units coded MEM removed from qualification Units added to elective pool Imported units upgraded to more recent version	
CPC40110 Certificate IV in Building and Construction (Building)	CPC40110 Certificate IV in Building and Construction (Building)	Revised qualification, deemed equivalent to CPC40110 Imported units upgraded to more recent version	E
CPC40208 Certificate IV in Building and Construction (Contract Administration)	CPC40208 Certificate IV in Building and Construction (Contract Administration)	Revised qualification, deemed equivalent to CPC40208 Imported units upgraded to more recent version	E
CPC40308 Certificate IV in Building and Construction (Estimating)	CPC40308 Certificate IV in Building and Construction (Estimating)	Revised qualification to comply with the NQC flexibility policy update, deemed equivalent to CPC40308 Imported units upgraded to more recent version	E
CPC40408 Certificate IV in Building and Construction (Sales)	CPC40408 Certificate IV in Building and Construction (Sales)	Revised qualification to comply with the NQC flexibility policy update, deemed equivalent to CPC40408 Imported units upgraded to more recent version	E

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CPC40508 Certificate IV in Building and Construction (Site Management)	CPC40508 Certificate IV in Building and Construction (Site Management)	Revised qualification deemed equivalent to CPC40508 Imported units upgraded to more recent version	E
CPC40611 Certificate IV in Building and Construction (Specialist Trades)	CPC40608 Certificate IV in Building and Construction (Specialist Trades)	Revised qualification, not deemed equivalent to CPC40608 Overall number of units required for qualification remains unchanged, but core units reduced from 4 to 2 in two streams: • crane operations • rigging Removed stream core units CPCCBC4043A and CPCCBC4044A (crane) and CPCCBC4045A and CPCCBC4046A(rigging) included in list of elective units A number of additional units added to the electives Imported units upgraded to more recent version	N
CPC40708 Certificate IV in Building and Construction (Trade Contracting)	CPC40708 Certificate IV in Building and Construction (Trade Contracting)	Revised qualification to comply with the NQC flexibility policy update, deemed equivalent to CPC40708 Imported units upgraded to more recent version	E
CPC40808 Certificate IV in Swimming Pool and Spa Building	CPC40808 Certificate IV in Swimming Pool and Spa Building	Revised qualification, deemed equivalent to CPC40808 Erroneous double listing of BSBWOR401A as both core and elective. Unit removed from core list, leaving correct number of core units for qualification requirement (17) Imported units upgraded to	E

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		more recent version	
CPC40911 Certificate IV in Plumbing and Services	CPC40909 Certificate IV in Plumbing and Services	Revised qualification, not deemed equivalent to CPC40909 Prerequisite unit requirement in a number of core units removed A number of units in qualification reviewed with a change to unit outcome Imported units upgraded to more recent version	N
CPC50108 Diploma of Building Surveying	CPC50108 Diploma of Building Surveying	Revised qualification, deemed equivalent to CPC50108 Imported units upgraded to more recent version	E
CPC50210 Diploma of Building and Construction (Building)	CPC50210 Diploma of Building and Construction (Building)	Revised qualification deemed equivalent to CPC50210	E
CPC50308 Diploma of Building and Construction (Management)	CPC50308 Diploma of Building and Construction (Management)	Revised qualification to comply with the NQC flexibility policy update, deemed equivalent to CPC50308	E
CPC50408 Diploma of Plumbing and Services	CPC50408 Diploma of Plumbing and Services	Revised qualification to comply with the NQC flexibility policy update, deemed equivalent to CPC50408	E
CPC50509 Diploma of Fire Systems Design	CPC50509 Diploma of Fire Systems Design	Revised qualification to comply with the NQC flexibility policy update, deemed equivalent to CPC50509	E
CPC50611 Diploma of Hydraulic Services Design	CPC50609 Diploma of Hydraulic Services Design	Revised qualification, not deemed equivalent to CPC50609 Prerequisite unit requirements upgraded in some core units	N

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CPC60108 Advanced Diploma of Building Surveying	CPC60108 Advanced Diploma of Building Surveying	Revised qualification, deemed equivalent to CPC60108 Imported units upgraded to more recent version	E
CPC60208 Advanced Diploma of Building and Construction (Management)	CPC60208 Advanced Diploma of Building and Construction (Management)	Revised qualification to comply with the NQC flexibility policy update, deemed equivalent to CPC60208	E
CPC70109 Vocational Graduate Certificate in Fire Systems Design Management	CPC70109 Vocational Graduate Certificate in Fire Systems Design Management	No change	E

Mapping of CPC08 qualifications

Mapping of CPC08 Version 5 qualifications to Version 4

Mapping CPC08 Version 5 qualifications to Version 4		
Qualification code and title in Version 5 Training Package	**Relationship to qualifications in Version 4**	**Comments in relation to previous version of this Training Package**
CPC31208 Certificate III in Wall and Ceiling Lining	CPC31208 Certificate III in Wall and Ceiling Lining	Addition of new general elective unit CPCCPB3027A Install ceiling insulation to elective pool of qualification Unit deemed equivalent
No other CPC qualifications were added or changed in Version 5.		

Mapping of CPC08 Version 4 qualifications to Version 3

Mapping CPC08 Version 4 qualifications to Version 3

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Qualification code and title in Version 4 Training Package	Relationship to qualifications in Version 3	Comments in relation to previous version of this Training Package
CPC40110 Certificate IV in Building and Construction (Building)	CPC40108 Certificate IV in Building and Construction (Building)	Revised qualification, not deemed equivalent to CPC40108 CPCCBC4012A Read and interpret plans and specifications changed from an elective unit to a core unit, resulting in the qualification increasing by one unit Imported unit CHCCS405A previously available in the elective unit list was not redeveloped in CHC08. CHC08 mapping guide identifies HLTHIR403B Work effectively with culturally diverse clients and co-workers from HLT07 as the equivalent replacement unit
CPC50210 Diploma of Building and Construction (Building)	CPC50208 Diploma of Building and Construction (Building)	Revised qualification, not equivalent to CPC50208 Core increased by seven units and electives decreased by one unit Eight additional units provided as options in the elective pool Overall qualification increased to 18 units
CPC50308 Diploma of Building and Construction (Management)	CPC50308 Diploma of Building and Construction (Management)	Revised qualification with same code, as equivalent Two units used in the elective pool changed as part of the process of aligning CPC50210 Diploma of Building and Construction (Building) to

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Mapping CPC08 Version 4 qualifications to Version 3		
Qualification code and title in Version 4 Training Package	**Relationship to qualifications in Version 3**	**Comments in relation to previous version of this Training Package**
		regulatory requirements: • CPCCBC5001B Apply building codes and standards to the construction process for medium rise building projects replaces • CPCCBC5018A Apply structural principles to the construction of medium rise buildings replaces Number of elective units remains unchanged
No other CPC qualifications were added or changed in Version 4.		

Mapping of CPC08 Version 3 qualifications to Version 2

Mapping CPC08 Version 3 qualifications to Version 2		
Qualification code and title in Version 3 Training Package	**Relationship to qualifications in Version 2**	**Comments in relation to previous version of this Training Package**
CPC40909 Certificate IV in Plumbing and Services	CPC40908 Certificate IV in Plumbing and Services	Addition of specialist hydraulic services design stream to CPC40908
CPC50609 Diploma of Hydraulic Services Design		New to CPC08
No other CPC qualifications were added or changed in Version 3.		

Mapping of CPC08 Version 2 qualifications to Version 1

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Mapping CPC08 Version 2 qualifications to Version 1		
Qualification code and title in Version 2 Training Package	**Relationship to qualifications in Version 1**	**Comments in relation to previous version of this Training Package**
CPC50509 Diploma of Fire Systems Design		New to CPC08.
CPC70109 Vocational Graduate Certificate in Fire Systems Design Management		New to CPC08.
No other CPC qualifications were added or changed in Version 2.		

Mapping Version 1 CPC08 qualifications to previous Training Package

Qualification code and title in Version 1 Training Package	**Relationship to qualifications in previous Training Package**	**Comments in relation to previous versions of this Training Package**
CPC10108 Certificate I in Construction	Updated qualification from previous BCG03 General Construction Training Package. Same essential outcomes. One unit on undertaking a construction project moved from elective to core. New OHS induction code unit has been added.	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC20108 Certificate II in Construction	Updated qualification from previous BCG03 General Construction Training Package. Same essential outcomes.	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC20208 Certificate II in Construction Pathways	New qualification developed to provide a pre-vocational pathway into various trade areas at Certificate III level.	

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Qualification code and title in Version 1 Training Package	Relationship to qualifications in previous Training Package	Comments in relation to previous versions of this Training Package
	Uses units aligned to other Certificate II and III qualifications to introduce learners to a range of basic skills and industry requirements.	
CPC20308 Certificate II in Steelfixing	Updated qualification from previous BCG03 General Construction Training Package. Same essential outcomes. Update of packaging based on review consultation advice.	This qualification was added to the BCG03 General Construction Training Package in October 2006 as part of the COAG initiated development of intermediate construction qualifications. The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC20408 Certificate II in Concreting	Updated qualification from previous BCG03 General Construction Training Package. Same essential outcomes. Update of packaging based on review consultation advice. Addition of *CPCCCO3006A* Carry *out repair and rectification of concrete* to electives.	This qualification was added to the BCG03 General Construction Training Package in October 2006 as part of the COAG initiated development of intermediate construction qualifications. The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC20508 Certificate II in Stoneworking	Updated qualification from previous BCG03 General Construction Training Package. Same essential outcomes. Update of packaging based on review consultation advice and replacement of unit *CPCCJN3001A Use static*	This qualification was added to the BCG03 General Construction Training Package in October 2006 as part of the COAG initiated development of intermediate construction qualifications. The qualification code stem

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Qualification code and title in Version 1 Training Package	Relationship to qualifications in previous Training Package	Comments in relation to previous versions of this Training Package
	machines with *CPCCST3006A Machine stone.*	has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC20708 Certificate II in Drainage	Updated qualification from previous BCP03 Plumbing and Services Training Package. Same essential outcomes.	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC20808 Certificate II in Metal Roofing and Cladding	Updated qualification from previous BCP03 Plumbing and Services Training Package. Same essential outcomes.	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC20908 Certificate II in Urban Irrigation	Updated qualification from previous BCP03 Plumbing and Services Training Package. Same essential outcomes.	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC30108 Certificate III in Bricklaying/Blocklaying	Updated qualification from previous BCG03 General Construction Training Package. Same essential outcomes.	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC30208 Certificate III in Carpentry	Updated qualification from previous BCG03 General Construction Training Package. Same essential outcomes.	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC30308 Certificate III in Concreting	Updated qualification from previous BCG03 General Construction Training Package. Same essential	The qualification code stem has been updated to reflect the new Integrated Framework and the end

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Qualification code and title in Version 1 Training Package	Relationship to qualifications in previous Training Package	Comments in relation to previous versions of this Training Package
	outcomes. Has a new elective high risk work licensing unit included	numeric for the year has been changed to '08'.
CPC30408 Certificate III in Demolition	Updated qualification from previous BCG03 General Construction Training Package. Same essential outcomes.	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC30508 Certificate III in Dogging	Updated qualification from previous BCG03 General Construction Training Package. Same essential outcomes. Has a new core high risk work licensing unit included	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC30608 Certificate III in Painting and Decorating	Updated qualification from previous BCG03 General Construction Training Package. Same essential outcomes. Has two units in decorative painting techniques split and enhanced: advanced decorating in the bank of elective units, as well as a new unit for application of intumescent coatings. Critical aspects of evidence updated in several units to require completion of 6 square metres of surface from previous 8 square metres.	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC30708 Certificate III in Rigging	Updated qualification from previous BCG03 General Construction Training Package. Same essential outcomes. Has two new core high risk work licensing units included	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.

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Qualification code and title in Version 1 Training Package	Relationship to qualifications in previous Training Package	Comments in relation to previous versions of this Training Package
CPC30808 Certificate III in Roof Tiling	Updated qualification from previous BCG03 General Construction Training Package. Same essential outcomes.	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC30908 Certificate III in Scaffolding	Updated qualification from previous BCG03 General Construction Training Package. Same essential outcomes. Has two new core high risk work licensing units included	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC31008 Certificate III in Solid Plastering	Updated qualification from previous BCG03 General Construction Training Package. Same essential outcomes.	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC31108 Certificate III in Steelfixing	Updated qualification from previous BCG03 General Construction Training Package. Same essential outcomes.	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC31208 Certificate III in Wall and Ceiling Lining	Updated qualification from previous BCG03 General Construction Training Package. Combines the previous Certificate III in Wall and Ceiling Lining (Plasterboard) developed as part of the COAG initiated intermediate qualifications development. Units from both previous qualifications have been combined in a restructured core and elective model.	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.

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Qualification code and title in Version 1 Training Package	Relationship to qualifications in previous Training Package	Comments in relation to previous versions of this Training Package
CPC31308 Certificate III in Wall and Floor Tiling	Updated qualification from previous BCG03 General Construction Training Package. Same essential outcomes.	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC31408 Certificate III in Construction Waterproofing	Updated qualification from previous BCG03 General Construction Training Package. Same essential outcomes. Three waterproofing-specific units of competency are now core, whereas the previous qualification only required completion of one of the three. 'General Construction' in qualification title removed.	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC31508 Certificate III in Formwork/Falsework	Updated qualification from previous BCG03 General Construction Training Package. Same essential outcomes. Update of packaging based on review consultation advice.	This qualification was added to the BCG03 General Construction Training Package in October 2006 as part of the COAG initiated development of intermediate construction qualifications. The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC31608 Certificate III in Paving	New qualification to meet the needs of specialist pavers. Includes five new paving-specific units and draws on existing construction units for completion.	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC31708 Certificate III in Low Rise	Updated qualification from previous BCG03 General	This qualification was added to the BCG03 General

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Qualification code and title in Version 1 Training Package	Relationship to qualifications in previous Training Package	Comments in relation to previous versions of this Training Package
Structural Framing	Construction Training Package. Same essential outcomes. Update of packaging based on review consultation advice.	Construction Training Package in October 2006 as part of the COAG initiated development of intermediate construction qualifications. The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC31808 Certificate III in Shopfitting	Updated qualification from BCF00 Off-Site Training Package. Has restructured packaging, using specialist shopfitting and general construction units.	This qualification incorporates some units of competency in previous BCF00 Off-Site Training Package qualifications: Certificate III in Off-Site Construction (Machining) and Certificate III in Off-Site Construction (Pre-fabrication). These qualifications were not widely used and to some degree are replicated in other Training Packages so have been removed from the Training Package. The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC31908 Certificate III in Joinery	Updated qualification from BCF00 Off-Site Construction Training Package. Has restructured packaging using specialist joinery, shopfitting and general construction units.	This qualification incorporates some units of competency in previous BCF00 Off-Site Training Package qualifications: Certificate III in Off-Site Construction (Machining)

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Qualification code and title in Version 1 Training Package	Relationship to qualifications in previous Training Package	Comments in relation to previous versions of this Training Package
		and Certificate III in Off-Site Construction (Pre-fabrication). These qualifications were not widely used and to some degree are replicated in other Training Packages so have been removed from the Training Package. The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC32008 Certificate III in Carpentry and Joinery	New qualification to meet the needs of jurisdictions that still have this joint trade outcome. Uses units from Carpentry and Joinery Certificate III qualifications in a flexible packaging arrangement.	
CPC32108 Certificate III in Signage	New qualification to meet the needs of the signage industry. Includes updated units from general and previous sign industry qualifications, plus six new units reflecting new technologies used in the industry.	This qualification replaces three previous BCF00 Off-Site Construction Training Package qualifications. These were Certificate III in Off-Site Construction (Sign Writing/Computer Operation), Certificate III in Off-Site Construction (sign Manufacture and Certificate III in Off-Site Construction (Neon Manufacture).
CPC32208 Certificate III in Joinery (Stairs)	Updated qualification from BCF00 Off-Site Construction Training Package. Has restructured packaging using specialist stair building,	This qualification incorporates some competencies in previous BCF00 Off-Site Training

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Qualification code and title in Version 1 Training Package	Relationship to qualifications in previous Training Package	Comments in relation to previous versions of this Training Package
	joinery and general construction units.	package qualifications: Certificate III in Off-Site Construction (Machining) and Certificate III in Off-Site Construction (Pre-fabrication). These qualifications were not widely used and to some degree are replicated in other Training Packages so have been removed from the Framework. The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC32308 Certificate III in Stonemasonry (Monumental/Installation)	Updated qualification from BCF00 Off-Site Construction Training Package. Has restructured packaging using specialist stonemasonry and general construction units.	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC32408 Certificate III in Plumbing	Revised qualification from previous BCP03 Plumbing and Services Training Package. The packaging requirements have been changed on industry advice to now identify two mandatory streams of the minimum four streams required to complete the qualification - Water and Sanitary. The Roofing stream also has 8 instead of 9 core units and Water stream 23 instead of 24 core units.	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.

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Qualification code and title in Version 1 Training Package	Relationship to qualifications in previous Training Package	Comments in relation to previous versions of this Training Package
CPC32508 Certificate III in Plumbing (Mechanical Services	Updated qualification from previous BCP03 Plumbing and Services Training Package. Same essential outcomes.	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC32608 Certificate III in Roof Plumbing	Revised qualification from previous BCP03 Plumbing and Services Training Package. The packaging requirements are 21 core units instead of the previous 20 and 4 elective units, instead of the previous 10.	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC32708 Certificate III in Gas Fitting	Updated qualification from previous BCP03 Plumbing and Services Training Package. Same essential outcomes.	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC32808 Certificate III in Fire Protection	Revised qualification from previous BCP03 Plumbing and Services Training Package. Packaging has been amended to reflect Extinguishing Agent Handling Licences as follows: Addition to core unit requirements of three units imported from CPP07 Property Services Training Package *PRMPFS25C Inspect, test and maintain gaseous fire suppression systems* *PRMPFS43A Prevent ozone depleting substance and synthetic greenhouse gas*	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.

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Qualification code and title in Version 1 Training Package	Relationship to qualifications in previous Training Package	Comments in relation to previous versions of this Training Package
	emissions *PRMPFS47A Inspect and test control and indicating equipment.*	
CPC40108 Certificate IV in Building and Construction (Building)	Updated qualification from previous BCG03 General Construction Training Package. Same essential outcomes. Has additional advice on State and Territory builder licensing requirements in qualification notes	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC40208 Certificate IV in Building and Construction (Contract Administration)	Updated qualification from previous BCG03 General Construction Training Package. Same essential outcomes.	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC40308 Certificate IV in Building and Construction (Estimating)	Updated qualification from previous BCG03 General Construction Training Package. Same essential outcomes.	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC40408 Certificate IV in Building and Construction (Sales)	Updated qualification from previous BCG03 General Construction Training Package. Same essential outcomes.	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC40508 Certificate IV in Building and Construction (Site Management)	Updated qualification from previous BCG03 General Construction Training Package. Same essential outcomes.	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC40608 Certificate	Updated qualification from	The qualification code stem

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Qualification code and title in Version 1 Training Package	Relationship to qualifications in previous Training Package	Comments in relation to previous versions of this Training Package
IV in Building and Construction (Specialist Trades)	previous BCG03 General Construction Training Package. Same essential outcomes. Has four new elective high risk work licensing units included. Has new advice on pre-requirements for Heritage restoration and Refractory bricklaying streams.	has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC40708 Certificate IV in Building and Construction (Trade Contracting)	Updated qualification from previous BCG03 General Construction Training Package. Same essential outcomes.	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC40808 Certificate IV in Swimming Pool and Spa Building	New qualification to meet industry demand and regulatory requirements. The qualification is based on the Certificate IV in Building and Construction (Building) with three new core units specific to swimming pool and spa building.	
CPC40908 Certificate IV in Plumbing and Services	Updated qualification from previous BCP03 Plumbing and Services Training Package. Same essential outcomes.	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC50108 Diploma of Building Surveying	Updated qualification from previous BCG03 General Construction Training Package. Same essential outcomes.	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC50208 Diploma of Building and	Updated qualification from previous BCG03 General Construction Training	The qualification code stem has been updated to reflect the new Integrated

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Qualification code and title in Version 1 Training Package	Relationship to qualifications in previous Training Package	Comments in relation to previous versions of this Training Package
Construction (Building)	Package. Same essential outcomes.	Framework and the end numeric for the year has been changed to '08'.
CPC50308 Diploma of Building and Construction (Management)	Updated qualification from previous BCG03 General Construction Training Package. Same essential outcomes.	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC50408 Diploma of Plumbing and Services	Updated qualification from previous BCP03 Plumbing and Services Training Package. Same essential outcomes.	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC60108 Advanced Diploma of Building Surveying	Updated qualification from previous BCG03 General Construction Training Package. Same essential outcomes.	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.
CPC60208 Advanced Diploma of Building and Construction (Management)	Updated qualification from previous BCG03 General Construction Training Package. Same essential outcomes.	The qualification code stem has been updated to reflect the new Integrated Framework and the end numeric for the year has been changed to '08'.

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Mapping of CPC08v9 units of competency

Mapping CPC08 Version 9.1 units to Version 9

Deletion of the following units associated with the qualification CPC50108 Diploma of Building Surveying

- CPCCSV5001A Assess the construction of domestic scale buildings
- CPCCSV5002A Evaluate materials for construction of domestic scale buildings
- CPCCSV5005A Apply footing and geomechanical design principles to domestic scale buildings
- CPCCSV5006A Assess construction faults in residential buildings
- CPCCSV5007A Undertake site surveys and set-out procedures for building projects
- CPCCSV5008A Apply building control legislation to building surveying
- CPCCSV5010A Interact with clients in a regulated environment
- CPCCSV5011A Apply building codes and standards to residential buildings
- CPCCSV5012A Assess timber-framed designs for one and two storey buildings
- CPCCSV5013A Apply principles of energy efficient design to buildings
- CPCCSV5014A Apply building surveying procedures to residential buildings
- CPCCSV5015A Assess structural requirements for domestic scale buildings

Mapping Version 9 CPC08 units of competency to Version 8 CPC08

Unit code and title in V9 Training Package	Relationship to units in V8 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
CPCCCO2021A Handle concreting materials	CPCCCO2011A Handle concreting materials	Changes to performance criteria, range statement, evidence requirements and methods of assessment Range of other minor editorial changes Not equivalent to CPCCCO2011A	N
CPCCCO2022A Use and maintain concreting plant, tools and equipment	CPCCCO2012A Use concreting tools and equipment	Changes to unit title, elements, performance criteria, range statement, required skills, methods of assessment, guidance information for assessment Range of other minor editorial changes Not equivalent to CPCCCO2012A	N
CPCCCO3035A		New unit	

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Unit code and title in V9 Training Package	Relationship to units in V8 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
Assess and specify concrete supply requirements			
CPCCCO3036A Plan concrete work and brief team		New unit	
CPCCCO3041A Place concrete	CPCCCO3021A Place concrete	Changes to descriptor, elements and performance criteria, required skills and knowledge, critical aspects for assessment, and methods of assessment Range of other minor editorial changes Not equivalent to CPCCCO3021A	N
CPCCCO3042A Finish concrete	CPCCCO3022A Finish concrete	Changes to elements and performance criteria, range statement, critical aspects for assessment, and methods of assessment Range of other minor editorial changes Not equivalent to CPCCCO3022A	N
CPCCCO3043A Cure concrete	CPCCCO3023A Cure concrete	Changes to descriptor, elements and performance criteria, range statement, critical aspects for assessment, and methods of assessment Range of other minor editorial changes Not equivalent to CPCCCO3023A	N
CPCCCO3044A Carry out decorative finishes to concrete	CPCCCO3024A Carry out decorative finishes to concrete	Changes to elements and performance criteria, required skills and knowledge, range statement, critical aspects for assessment, and methods of assessment Range of other minor editorial	N

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Unit code and title in V9 Training Package	Relationship to units in V8 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
		changes Not equivalent to CPCCCO3024A	
	CPCCCO3025A Resurface concrete	Deleted unit Replaced by non-equivalent CPCCCO3055A Install topping slabs	

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Unit code and title in V9 Training Package	Relationship to units in V8 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
CPCCCO3046A Repair and rectify concrete	CPCCCO3026A Carry out repair and rectification of concrete	Changes to unit title, performance criteria, required skills and knowledge, range statement, critical aspects for assessment, and methods of assessment Range of other minor editorial changes Not equivalent to CPCCCO3026A	N
CPCCCO3047A Cut and core concrete	CPCCCO3027A Cut and core concrete	Changes to performance criteria, required skills and knowledge, range statement, and methods of assessment Range of other minor editorial changes Not equivalent to CPCCCO3027A	N
CPCCCO3048A Construct tilt panels on site	CPCCCO3028A Carry out tilt panel construction	Changes to unit title, elements and performance criteria, required skills and knowledge, range statement, critical aspects for assessment, and methods of assessment Range of other minor editorial changes Not equivalent to CPCCCO3028A	N
CPCCCO3049A Apply and finish sprayed concrete	CPCCCO3029A Apply and finish sprayed concrete	Changes to performance criteria, required skills and knowledge, range statement, and methods of assessment Range of other minor editorial changes Not equivalent to CPCCCO3029A	N
CPCCCO3050A Carry out high performance concreting	CPCCCO3030A Carry out high performance concreting	Changes to performance criteria, required skills and knowledge, range statement, and methods of assessment Range of other minor editorial changes	N

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Unit code and title in V9 Training Package	Relationship to units in V8 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
		Not equivalent to CPCCCO3030A	
CPCCCO3051A Conduct off-form vertical concrete operations	CPCCCO3031A Conduct off-form vertical concrete operations	Changes to performance criteria, required skills and knowledge, range statement, and methods of assessment Range of other minor editorial changes Not equivalent to CPCCCO3031A	N
CPCCCO3052A Conduct concrete boom delivery operations	CPCCCO3032A Conduct concrete boom delivery operations	Changes to performance criteria, required skills and knowledge, range statement, and methods of assessment Range of other minor editorial changes Not equivalent to CPCCCO3032A	N
CPCCCO3053A Slump test concrete	CPCCCO3033A Slump test concrete	Changes to performance criteria, required skills and knowledge, range statement, critical aspects for assessment, and methods of assessment Range of other minor editorial changes Not equivalent to CPCCCO3033A	N
CPCCCO3054A Operate concrete agitator trucks	CPCCCO3034A Conduct concrete agitator truck operations	Changes to unit title, performance criteria, required skills and knowledge, range statement, and methods of assessment Range of other minor editorial changes Not equivalent to CPCCCO3034A	N
CPCCCO3055A Install topping slabs	CPCCCO3025A Resurface concrete	Changes to unit title, descriptor, elements and performance criteria, required skills and knowledge, range statement, critical aspects for assessment, and methods of assessment	N

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Unit code and title in V9 Training Package	Relationship to units in V8 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
		Range of other minor editorial changes Not equivalent to CPCCCO3025A	
CPCCCO4001A Supervise concreting work		New unit	
	CPCCDE2011A Use demolition tools and equipment	Deleted unit Replaced by new units CPCCDE3017A and CPCCDE3018A	
	CPCCDE3011A Carry out mechanical general demolition	Deleted unit Replaced by new units CPCCDE3023A, CPCCDE3024A, CPCCDE3025A and CPCCDE3026A	
	CPCCDE3013A Operate a crushing plant	Deleted unit Replaced by CPCCDE3021A	

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Unit code and title in V9 Training Package	Relationship to units in V8 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
CPCCDE3016A Identify hazards on demolition sites and apply risk management strategies		New unit	
CPCCDE3017A Select and use hand tools and equipment for demolition tasks		New unit	
CPCCDE3018A Select and use small plant and equipment for demolition tasks		New unit	
CPCCDE3019A Demolish small buildings and structures using hand tools and small plant and equipment		New unit	
CPCCDE3020A Select and use tools and equipment for hot work in the demolition industry		New unit	
CPCCDE3021A Operate demolition material crushing plants	CPCCDE3013A Operate a crushing plant	New unit, based on CPCCDE3013A Not equivalent to CPCCDE3013A	N
CPCCDE3022A Manage demolition recyclable and waste materials using load shifting equipment		New unit	
CPCCDE3023A Operate skid steer		New unit	

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Unit code and title in V9 Training Package	Relationship to units in V8 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
loaders at ground level on demolition sites			
CPCCDE3024A Operate mobile plant on suspended floors on demolition sites		New unit	
CPCCDE3025A Operate remote-controlled plant on demolition sites		New unit	
CPCCDE3026A Operate excavators at ground level to demolish building elements		New unit	
CPCCDE4001A Plan and prepare for activities on demolition sites		New unit	
CPCCDE4002A Plan and supervise demolition work to minimise environmental and public health and safety impact		New unit	
CPCCCDE4003A Supervise individual activities on demolition sites		New unit	
CPCCDE4004A Finalise demolition activities and supervise property		New unit	

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Unit code and title in V9 Training Package	Relationship to units in V8 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
handover			
CPCCJN2002B Prepare for off-site manufacturing process	CPCCJN2002A Prepare for off-site manufacturing process	Minor changes in required knowledge and range statement Other minor editorial changes Equivalent to CPCCJN2002A	E
	CPCCST2002A Identify and use stone products	Deleted unit Replaced by CPCCST2006A	
CPCCST2006A Identify and use stone products	CPCCST2002A Identify and use stone products	Changes to descriptor, application, performance criteria (including additional performance criteria), required skills and knowledge, and critical aspects for assessment Range of other minor editorial changes Not equivalent to CPCCST2002A	N
	CPCCST3005A Carry out profile work	Deleted unit Replaced by new unit CPCCST3022A Carry out profile work	
	CPCCST3008A Inlay lead to stone	Deleted unit Replaced by new unit CPCCST3018A Inlay lead to stone	

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Unit code and title in V9 Training Package	Relationship to units in V8 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
CPCCST3015A Apply gilding to stone		New unit based on superseded unit BCG3083A Apply gilding to stone Not equivalent to superseded BCG unit	
CPCCST3016A Build solid stonemasonry walls		New unit based on superseded unit BCF3059A Cavity and solid construction Not equivalent to superseded BCF unit	
CPCCST3017A Construct stone arches		New unit based on superseded unit BCG3056A Construct stone arches Not equivalent to superseded BCG unit	
CPCCST3018A Inlay lead to stone	CPCCST3008A Inlay lead to stone	New unit based on superseded unit CPCCST3008A Not equivalent to CPCCST3008A	N
CPCCST3019A Lay stonemasonry stairs		New unit based on superseded unit BCF3027A Lay stair and floor surfaces Not equivalent to superseded BCF unit	
CPCCST3020A Produce reconstituted stone		New unit based on superseded unit BCG3053A Produce reconstituted stone Not equivalent to superseded BCG unit	
CPCCST3021A Renovate and restore stone work		New unit based on superseded unit BCG3050A Renovate and restore stone work Not equivalent to superseded BCG unit	
CPCCST3022A Carry out profile work	CPCCST3005A Carry out profile work	Changes to application, performance criteria, required knowledge, and critical aspects for assessment	N

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Unit code and title in V9 Training Package	Relationship to units in V8 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
		Range of other minor editorial changes Not equivalent to CPCCST3005A	
CPCPFS3044A Install distribution and range pipes	CPCPFS3032A Install distribution and range pipes	Outcomes changed to include reference to draining down. References to sustainability and work health and safety strengthened Range of other minor editorial changes Not equivalent to CPCPFS3032A	N
CPCPFS3045A Fit off sprinkler heads, controls and ancillary equipment	CPCPFS3033A Fit off sprinkler heads, controls and ancillary equipment	Outcomes changed to include references to draining down and recharging. References to sustainability and work health and safety strengthened Range of other minor editorial changes Not equivalent to CPCPFS3033A	N
CPCPFS3046A Test the integrity of water-based fire protection systems using pressure	CPCPFS3035A Test fire protection systems for pressure	Change to unit title Outcomes changed to include references to draining down and recharging. References to sustainability and work health and safety strengthened Range of other minor editorial changes Not equivalent to CPCPFS3035A	N
CPCPFS3047A Test and maintain automatic fire sprinklers	CPCPFS3039A Test and maintain automatic fire sprinklers	Outcomes changed to include references to draining down and recharging. References to sustainability and work health and safety strengthened Range of other minor editorial changes Not equivalent to CPCPFS3039A	N

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Unit code and title in V9 Training Package	Relationship to units in V8 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
CPCPFS3048A Install fixed fire pumpsets		New unit	
CPCPFS3049A Conduct preventive maintenance on fixed fire pumpsets		New unit	
CPCPFS4027A Commission fire sprinkler systems		New unit	
	CPCPGS3058A Install and commission Type A gas appliances	Deleted unit	

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Unit code and title in V9 Training Package	Relationship to units in V8 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
CPCPGS3061A Install and commission Type A gas appliances	CPCPGS3058A Install and commission Type A gas appliances	Performance criterion and item in required knowledge section added Not equivalent to CPCPGS3058A	N
CPCPGS4011C Design and size consumer gas installations	CPCPGS4011B Design and size consumer gas installations	Reference to standard updated in required knowledge section Equivalent to CPCPGS4011B	E
CPCPGS4023B Install, commission and service Type B gas appliances	CPCPGS4023A Install, commission and service Type B gas appliances	Reference to standards updated in required knowledge section and range statement Equivalent to CPCPGS4023A	E
CPCSUS4002A Use building science principles to construct energy efficient buildings		New unit	
CPCSUS4003A Maximise energy efficiency through applied trade skills		New unit	
CPCSUS5002A Develop action plans to retrofit existing buildings for energy efficiency		New unit	
CPCSUS5003A Manage energy efficient building methods and strategies		New unit	

Mapping of CPC08v8 units of competency

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Mapping Version 8 CPC08 units of competency to Version 7

Unit code and title in V8 Training Package	Relationship to units in V7 CPC08	Comments in relation to previous version of this Training Package	Equivalent / Not equivalent
CPCCBC4012B Read and interpret plans and specifications	CPCCBC4012A Read and interpret plans and specifications	Minor change in unit descriptor and evidence guide overview information Equivalent to CPCCBC4012A	E
CPCCBC5007B Administer the legal obligations of a building or construction contractor	CPCCBC5007A Administer the legal obligations of a building or construction contract	Minor editorial corrections to restore original intent to represent contractors rather than contracts, including associated change in unit title Literacy skills required for completing legal documents and records made more explicit Equivalent to CPCCBC5007A	E
CPCCBC6001B Apply building codes and standards to the construction process for large building projects	CPCCBC6001A Apply building codes and standards to the construction process for large building projects	Minor changes throughout unit, mostly reflecting update to National Construction Code Equivalent to CPCCBC6001A	E
CPCCBC6018A Manage processes for complying with legal obligations of a building or construction contractor	CPCCBC6004A Manage processes for and legal obligations of a building or construction contract	Changes to unit title, descriptor, application, required knowledge and critical aspects Not equivalent to CPCCBC6004A	N
CPCCCA2002B Use carpentry tools and equipment	CPCCCA2002A Use carpentry tools and equipment	Minor editorial corrections, including: removing reference to drawing requirements reformatting and rewording some critical aspects (intent unchanged) to enhance clarity Equivalent to CPCCCA2002A	E

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Unit code and title in V8 Training Package	Relationship to units in V7 CPC08	Comments in relation to previous version of this Training Package	Equivalent / Not equivalent
CPCCCA3005B Construct ceiling frames	CPCCCA3005A Construct ceiling frames	Photovoltaic (solar) panels added to range statement Equivalent to CPCCCA3005A	E
CPCCCA3006B Erect roof trusses	CPCCCA3006A Erect roof trusses	Change to performance criterion Equivalent to CPCCCA3006A	E
CPCCCA3007C Construct pitched roofs	CPCCCA3007B Construct pitched roofs	Photovoltaic (solar) panels added to range statement Equivalent to CPCCCA3007B	E
CPCCCA3008B Construct eaves	CPCCCA3008A Construct eaves	Photovoltaic (solar) panels added to range statement Equivalent to CPCCCA3008A	E
CPCCCA3009B Construct advanced roofs	CPCCCA3009A Construct advanced roofs	Minor change made in prerequisite unit CPCCCA3007C Equivalent to CPCCCA3009A	E
CPCCCA3017B Install exterior cladding	CPCCCA3017A Install exterior cladding	Photovoltaic (solar) panels added to range statement Equivalent to CPCCCA3017A	E
CPCCCM2005B Use construction tools and equipment	CPCCCM2005A Use construction tools and equipment	Minor editorial and formatting changes Equivalent to CPCCCM2005A	E
CPCCCM2006B Apply basic levelling procedures	CPCCCM2006A Apply basic levelling procedures	Minor editorial and formatting changes Equivalent to CPCCCM2006A	E
CPCCCM2007B Use explosive power tools	CPCCCM2007A Use explosive power tools	Minor changes made to range statement, including addition of photovoltaic (solar) panels Equivalent to CPCCCM2007A	E
CPCCCM2008B Erect and dismantle restricted height	CPCCCM2008A Erect and dismantle restricted height	Photovoltaic (solar) panels added to range statement Equivalent to CPCCCM2008A	E

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Unit code and title in V8 Training Package	Relationship to units in V7 CPC08	Comments in relation to previous version of this Training Package	Equivalent / Not equivalent
scaffolding	scaffolding		
CPCCCM2010B Work safely at heights	CPCCCM2010A Work safely at heights	Photovoltaic (solar) panels added to range statement Equivalent to CPCCCM2010A	E
CPCCCM1016A Identify requirements for safe tilt-up work	CPCCCM2011A Carry out tilt-up work safely	Nominal AQF level of unit and unit title changed to better reflect unit outcomes Prerequisite unit requirement removed Changes to wording of elements and required skills Not equivalent to CPCCCM2011A	N
CPCCCM3001C Operate elevated work platforms	CPCCCM3001B Operate elevated work platforms	Minor change made in prerequisite unit CPCCCM2010B Equivalent to CPCCCM3001B	E
CPCCPB3026B Erect and maintain trestle and plank systems	CPCCPB3026A Erect and maintain trestle and plank systems	Minor editorial change in PC 1.6 Equivalent to CPCCPB3026A	E
CPCCPD3030B Apply protective paint coating systems	CPCCPD3030A Apply protective paint coating systems	Photovoltaic (solar) panels added to range statement Equivalent to CPCCPD3030A	E
CPCCRT3003B Repair and replace valleys, valley irons and flashings	CPCCRT3003A Repair and replace valleys, valley irons and flashings	Photovoltaic (solar) panels added to range statement Equivalent to CPCCRT3003A	E
CPCCRT3004B Repair and renovate tile roofs	CPCCRT3004A Repair and renovate tile roofs	Photovoltaic (solar) panels added to range statement Equivalent to CPCCRT3004A	E
CPCCRT3005B Slate a roof	CPCCRT3005A Slate a roof	Photovoltaic (solar) panels added to range statement Equivalent to CPCCRT3005A	E

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Unit code and title in V8 Training Package	Relationship to units in V7 CPC08	Comments in relation to previous version of this Training Package	Equivalent / Not equivalent
CPCCRT3006B Fix shingles to roofs and facades	CPCCRT3006A Fix shingles to roofs and facades	Photovoltaic (solar) panels added to range statement Equivalent to CPCCRT3006A	E
CPCCSH3006A Apply finishes	CPCCSH3004A Apply finishes	Element 6 and associated unit content relating to powder coating removed Not equivalent to CPCCSH3004A	N
CPCCSI3015A Produce airbrushed signage		New unit	
CPCCSI3016A Produce digital signage using advanced software applications		New unit	
CPCCVE1002B Undertake a basic computer design project	CPCCVE1002A Undertake a basic computer design project	Minor changes throughout unit Equivalent to CPCCVE1002A	E
CPCPCM2039A Carry out interactive workplace communication	CPCPCM2002A Carry out interactive workplace communication	Changes to performance criteria, required skills, range statement and critical aspects Not equivalent to CPCPCM2002A	N
CPCPCM2040A Read plans and calculate plumbing quantities	CPCPCM2004A Read plans and calculate plumbing quantities	Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPCM2004A	N
	CPCPCM2011A Apply first aid in the workplace	Unit deleted and replaced with imported HLT07 unit (HLTFA211A)	

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Unit code and title in V8 Training Package	Relationship to units in V7 CPC08	Comments in relation to previous version of this Training Package	Equivalent / Not equivalent
CPCPCM2041A Work effectively in the plumbing and services sector	CPCPCM2021A Work effectively in the plumbing and services sector	Prerequisite unit updated Content on sustainability added to PC and range statement Minor updates to content throughout Changed critical aspects Not equivalent to CPCPCM2021A	N
CPCPCM2043A Carry out WHS requirements	CPCPCM2023A Carry out OHS requirements	Changes to application, elements and performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPCM2023A	N
CPCPCM2045A Handle and store plumbing materials	CPCPCM2025A Handle and store plumbing materials	Prerequisite unit updated Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPCM2025A	N
CPCPCM2046A Use plumbing hand and power tools	CPCPCM2026A Use plumbing hand and power tools	Prerequisite unit updated Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPCM2026A	N
CPCPCM2047A Carry out levelling	CPCPCM2027A Carry out levelling	Prerequisite unit updated Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPCM2027A	N
CPCPCM2048A Cut and join sheet metal	CPCPCM2028A Cut and join sheet metal	Prerequisite unit updated Changes to performance criteria, required skills, range statement and critical aspects Not equivalent to CPCPCM2028A	N

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Unit code and title in V8 Training Package	Relationship to units in V7 CPC08	Comments in relation to previous version of this Training Package	Equivalent / Not equivalent
CPCPCM2049A Cut using oxy-LPG-acetylene equipment	CPCPCM2029A Cut using oxy-LPG-acetylene equipment	Prerequisite unit updated Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPCM2029A	N
CPCPCM2050A Mark out materials	CPCPCM2030A Mark out materials	Prerequisite unit updated Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPCM2030A	N
CPCPCM2052A Weld using oxy-acetylene equipment	CPCPCM2032A Weld using oxy-acetylene equipment	Prerequisite unit updated Changes to descriptor, performance criteria, required skills, range statement and critical aspects Not equivalent to CPCPCM2032A	N
CPCPCM2053A Weld using manual metal arc welding equipment	CPCPCM2033A Weld using arc welding equipment	Prerequisite unit updated Changes to unit title, descriptor, performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPCM2033A	N
CPCPCM2054A Carry out simple concreting and rendering	CPCPCM2034A Carry out simple concreting and rendering	Prerequisite unit updated Changes to performance criteria, required skills, range statement and critical aspects Not equivalent to CPCPCM2034A	N
CPCPCM2055A Work safely on roofs	CPCPCM2035A Work safely on roofs	Prerequisite unit updated Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPCM2035A	N
CPCPCM3021A Flash penetrations	CPCPCM3011A Flash penetrations	Prerequisite unit updated Changes to descriptor, performance	N

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Unit code and title in V8 Training Package	Relationship to units in V7 CPC08	Comments in relation to previous version of this Training Package	Equivalent / Not equivalent
through roofs and walls	through roofs and walls	criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPCM3011A	
CPCPCM3022A Weld polyethylene and polypropylene pipes using fusion method	CPCPCM3012A Weld plastic pipe using fusion method	Prerequisite unit updated Changes to unit title, descriptor, application, performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPCM3012A	N
CPCPCM3023A Fabricate and install non-ferrous pressure piping	CPCPCM3013A Fabricate and install non-ferrous pressure piping	Prerequisite unit updated Changes to application, performance criteria, required skills, range statement and critical aspects Not equivalent to CPCPCM3013A	N
CPCPCM4011A Carry out work-based risk control processes	CPCPCM4001A Carry out work-based risk control processes	Changes to performance criteria, required skills and knowledge, range statement, critical aspects and context of assessment Not equivalent to CPCPCM4001A	N
CPCPCM4012A Estimate and cost work	CPCPCM4002A Estimate and cost work	Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPCM4002A	N
CPCPCM4013A Produce 2-D architectural drawings using CAD software	CPCPCM4003A Produce 2-D architectural drawings using CAD software	Changes to application, element, performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPCM4003A	N
CPCPCM4014A Prepare simple sketches and drawings	CPCPCM4004A Prepare simple sketches and drawings	Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPCM4004A	N

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Unit code and title in V8 Training Package	Relationship to units in V7 CPC08	Comments in relation to previous version of this Training Package	Equivalent / Not equivalent
CPCPCM5010A Design complex sanitary plumbing and drainage systems	CPCPCM5000A Design complex sanitary plumbing and drainage systems	Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPCM5000A	N
CPCPCM5011A Design complex cold water systems	CPCPCM5001A Design complex cold water systems	Changes to descriptor, performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPCM5001A	N
CPCPCM5012A Design complex stormwater and roof drainage systems	CPCPCM5002B Design complex stormwater and roof drainage systems	Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPCM5002B	N
CPCPCM5013A Design complex (non-solar) heated water systems	CPCPCM5003B Design complex (non-solar) heated water systems	Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPCM5003B	N
CPCPCM5014A Design sewer infrastructure systems	CPCPCM5004A Design sewer systems	Changes to unit title, descriptor, performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPCM5004A	N
CPCPDR2021A Locate and clear blockages	CPCPDR2011A Locate and clear blockages	Prerequisite unit updated Changes to descriptor, performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPDR2011A	N
CPCPDR2022A Install domestic treatment plants	CPCPDR2012A Install domestic treatment plants	Prerequisite unit updated plus minor changes to unit Not equivalent to CPCPDR2012A	N
CPCPDR2023A Maintain effluent	CPCPDR2013A Maintain effluent	Prerequisite unit updated	N

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Unit code and title in V8 Training Package	Relationship to units in V7 CPC08	Comments in relation to previous version of this Training Package	Equivalent / Not equivalent
disinfection systems	disinfection systems	Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPDR2013A	
CPCPDR2024A Install stormwater and sub-soil drainage systems	CPCPDR2014A Install stormwater and sub-soil drainage systems	Prerequisite unit updated plus minor changes to unit Not equivalent to CPCPDR2014A	N
CPCPDR2025A Drain work site	CPCPDR2015A Drain work site	Prerequisite unit updated Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPDR2015A	N
CPCPDR2026A Install prefabricated inspection openings and enclosures	CPCPDR2016A Install prefabricated inspection openings and enclosures	Prerequisite unit updated plus minor changes to unit Not equivalent to CPCPDR2016A	N
CPCPDR3021A Plan layout of a residential sanitary drainage system	CPCPDR3011A Plan layout of a residential sanitary drainage system	Prerequisite unit updated plus minor changes to unit Not equivalent to CPCPDR3011A	N
CPCPDR3022A Install below ground sanitary drainage systems	CPCPDR3012A Install below ground sanitary drainage systems	Prerequisite unit updated Changes to descriptor, performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPDR3012A	N
CPCPDR3023A Install on-site disposal systems	CPCPDR3013A Install on-site disposal systems	Prerequisite unit updated plus minor changes to unit Not equivalent to CPCPDR3013A	N
CPCPDR4011B Design and size sanitary drainage systems	CPCPDR4011A Design and size sanitary drainage systems	Minor editorial changes to performance criteria, required skills and knowledge, range statement and critical aspects	E

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Unit code and title in V8 Training Package	Relationship to units in V7 CPC08	Comments in relation to previous version of this Training Package	Equivalent / Not equivalent
		Equivalent to CPCPDR4011A	
CPCPDR4012B Design and size stormwater drainage systems	CPCPDR4012A Design and size stormwater drainage systems	Minor editorial changes to performance criteria, required skills and knowledge, range statement and critical aspects Equivalent to CPCPDR4012A	E
CPCPDR4013B Design and size domestic treatment plant disposal systems	CPCPDR4013A Design and size domestic treatment plant disposal systems	Minor editorial changes to performance criteria, required skills and knowledge, range statement and critical aspects Equivalent to CPCPDR4013A	E
CPCPFS2021A Connect static storage tanks for fixed fire protection systems	CPCPFS2011A Connect static storage tanks for fixed fire protection systems	Prerequisite unit updated Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPFS2011A	N
CPCPFS2022A Install portable fire equipment	CPCPFS2012A Install portable fire equipment	Prerequisite unit updated Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPFS2012A	N
CPCPFS3030A Design pre-calculated fire sprinkler systems	CPCPFS3010A Design pre-calculated fire sprinkler systems	Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPFS3010A	N
CPCPFS3031A Fabricate and install fire hydrant and hose reel systems	CPCPFS3011A Fabricate and install fire hydrant and hose reel systems	Prerequisite unit updated Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPFS3011A	N
CPCPFS3032A Install distribution and range pipes	CPCPFS3012A Install distribution and range pipes	Prerequisite unit updated Changes to performance criteria, required skills and knowledge,	N

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Unit code and title in V8 Training Package	Relationship to units in V7 CPC08	Comments in relation to previous version of this Training Package	Equivalent / Not equivalent
		range statement and critical aspects Not equivalent to CPCPFS3012A	
CPCPFS3033A Fit off sprinkler heads, controls and ancillary equipment	CPCPFS3013A Fit off sprinkler heads, controls and ancillary equipment	Prerequisite unit updated Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPFS3013A	N
CPCPFS3034A Install control valve assemblies, actuating devices and local alarms	CPCPFS3014A Install control valve assemblies, actuating devices and local alarms	Prerequisite unit updated Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPFS3014A	N
CPCPFS3035A Test fire protection systems for pressure	CPCPFS3015A Test fire protection systems for pressure	Prerequisite unit updated Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPFS3015A	N
CPCPFS3036A Install special hazard systems	CPCPFS3016A Install special hazard systems	Prerequisite unit updated Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPFS3016A	N
CPCPFS3037A Install domestic and residential life safety sprinkler systems	CPCPFS3017A Install domestic and residential life safety sprinkler systems	Prerequisite unit updated Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPFS3017A	N
CPCPFS3038A Test and maintain fire hydrant and hose reel installations	CPCPFS3018A Test and maintain fire hydrant and hose reel installations	Prerequisite unit updated Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPFS3018A	N

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Unit code and title in V8 Training Package	Relationship to units in V7 CPC08	Comments in relation to previous version of this Training Package	Equivalent / Not equivalent
CPCPFS3039A Test and maintain automatic fire sprinklers	CPCPFS3019A Test and maintain automatic fire sprinklers	Prerequisite unit updated Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPFS3019A	N
CPCPFS3040A Conduct basic functional testing of water-based fire-suppression systems	CPCPFS3020A Conduct basic functional testing of water-based fire-suppression systems	Prerequisite unit updated Minor change to sustainability PC Not equivalent to CPCPFS3020A	N
CPCPFS3041A Inspect and test fire pumpsets	CPCPFS3021A Inspect and test fire pumpsets	Prerequisite unit updated Minor change to sustainability PC Not equivalent to CPCPFS3021A	N
CPCPFS3042A Conduct annual functional testing of complex water-based fire-suppression systems	CPCPFS3022A Conduct annual functional testing of complex water-based fire-suppression systems	Prerequisite unit updated Minor change to sustainability PC Not equivalent to CPCPFS3022A	N
CPCPFS3043A Conduct functional water flow testing	CPCPFS3023A Conduct functional water flow testing	Prerequisite unit updated Minor change to sustainability PC Not equivalent to CPCPFS3023A	N
CPCPFS4025A Commission fire alarm and detection system interface devices	CPCPFS4005A Commission fire alarm and detection systems	Changes to unit title, descriptor, performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPFS4005A	N
CPCPFS4026A Commission firefighting appliances	CPCPFS4006A Commission firefighting appliances	Changes to performance criteria, required skills and knowledge, range statement and critical aspects Detailed licensing information included	N

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Unit code and title in V8 Training Package	Relationship to units in V7 CPC08	Comments in relation to previous version of this Training Package	Equivalent / Not equivalent
		Not equivalent to CPCPFS4006A	
CPCPFS4021A Commission domestic and residential fire suppression sprinkler systems	CPCPFS4011A Commission domestic and residential fire suppression sprinkler systems	Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPFS4011A	N
CPCPFS4022A Commission and maintain special hazard fire suppression systems	CPCPFS4012A Commission and maintain special hazard fire suppression systems	Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPFS4012A	N
CPCPFS4023A Commission fire system pumpsets	CPCPFS4013A Commission fire system pump sets	Changes to performance criteria, required skills and knowledge, range statement and critical aspects Minor change to unit title Not equivalent to CPCPFS4013A	N
CPCPFS4024A Design residential and domestic fire sprinkler systems	CPCPFS4014A Design residential and domestic fire sprinkler systems	Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPFS4014A	N
CPCPFS5010A Design fire-compliant hydraulic services	CPCPFS5000A Design fire-compliant hydraulic services	Changes to descriptor, performance criteria, required skills, range statement and critical aspects Not equivalent to CPCPFS5000A	N
CPCPFS5011A Design fire sprinkler systems	CPCPFS5001A Design fire sprinkler systems	Changes to performance criteria, required skills, range statement and critical aspects Not equivalent to CPCPFS5001A	N
CPCPFS5012A Design fire hydrant and hose reel systems	CPCPFS5002A Design fire hydrant and hose reel systems	Changes to performance criteria, required skills, range statement and critical aspects Not equivalent to CPCPFS5002A	N

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Unit code and title in V8 Training Package	Relationship to units in V7 CPC08	Comments in relation to previous version of this Training Package	Equivalent / Not equivalent
CPCPGS3046A Install LPG systems in caravans, mobile homes and mobile workplaces	CPCPGS3016A Install LPG systems in caravans, mobile homes, water craft and mobile workplaces	Prerequisite unit updated Changes throughout unit, including unit title and critical aspects Not equivalent to CPCPGS3016A	N
CPCPGS3047A Install LPG systems in marine craft		New unit	
	CPCPGS3017A Install gas detection devices	Unit deleted New unit CPCPGS3047A Install LPG systems in marine craft while not equivalent, reflects outcomes of CPCPGS3017A	

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Unit code and title in V8 Training Package	Relationship to units in V7 CPC08	Comments in relation to previous version of this Training Package	Equivalent / Not equivalent
CPCPGS3048A Install gas pressure control equipment	CPCPGS3018A Install gas pressure control equipment	Prerequisite unit updated Minor changes throughout the unit Not equivalent to CPCPGS3018A	N
CPCPGS3049A Install Type A gas appliance flues	CPCPGS3019A Install Type A gas appliance flues	Prerequisite unit updated Minor changes throughout the unit Not equivalent to CPCPGS3019A	N
CPCPGS3050A Install Type B gas appliance flues	CPCPGS3020A Install Type B gas appliance flues	Prerequisite unit updated Minor changes throughout the unit Not equivalent to CPCPGS3020A	N
CPCPGS3051A Purge consumer piping	CPCPGS3021A Purge consumer piping	Prerequisite unit updated Changes to performance criteria, required skills, range statement and critical aspects Not equivalent to CPCPGS3021A	N
CPCPGS3052A Maintain Type A gas appliances	CPCPGS3022A Maintain Type A gas appliances	Prerequisite unit updated Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPGS3022A	N
CPCPGS3053A Disconnect and reconnect Type A gas appliances	CPCPGS3023A Disconnect and reconnect Type A gas appliances	Prerequisite unit updated Minor changes throughout the unit Not equivalent to CPCPGS3023A	N
CPCPGS3054A Calculate and install natural ventilation for Type A gas appliances	CPCPGS3024A Calculate and install natural ventilation for Type A gas appliances	Prerequisite unit updated Changes to descriptor, performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPGS3024A	N
CPCPGS3055A Install gas sub-meters	CPCPGS3025A Install subsidiary gas meters	Prerequisite unit updated Changes to unit title, descriptor, performance criteria, required skills	N

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Unit code and title in V8 Training Package	Relationship to units in V7 CPC08	Comments in relation to previous version of this Training Package	Equivalent / Not equivalent
		and knowledge, range statement and critical aspects Not equivalent to CPCPGS3025A	
CPCPGS3056A Install gas piping systems	CPCPGS3031A Install gas piping systems	Prerequisite unit updated Changes to performance criteria and required skills Not equivalent to CPCPGS3031A	N
CPCPGS3057A Size consumer gas piping systems	CPCPGS3032A Size consumer gas piping systems	Prerequisite unit updated Changes to descriptor, performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPGS3032A	N
CPCPGS3058A Install and commission Type A gas appliances	CPCPGS3033A Install and commission Type A gas appliances	Prerequisite unit updated Minor changes throughout the unit Not equivalent to CPCPGS3033A	N
CPCPGS3059A Install LPG storage of aggregate storage capacity up to 500 litres	CPCPGS3034A Install LPG storage of aggregate storage capacity up to 500 litres	Prerequisite unit updated Minor changes throughout the unit Not equivalent to CPCPGS3034A	N
CPCPGS3060A Install LPG storage of aggregate storage capacity exceeding 500 litres and less than 8KL	CPCPGS3035A Install LPG storage of aggregate storage capacity exceeding 500 litres and less than 8KL	Prerequisite unit updated Changes to descriptor, performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPGS3035A	N
CPCPGS4023A Install, commission and service Type B gas appliances	CPCPGS4003A Install, commission and service Type B gas appliances	Changes to application, performance criteria, required skills, range statement and critical aspects Not equivalent to CPCPGS4003A	N
CPCPGS4011B	CPCPGS4011A	Change in required knowledge and	E

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Unit code and title in V8 Training Package	Relationship to units in V7 CPC08	Comments in relation to previous version of this Training Package	Equivalent / Not equivalent
Design and size consumer gas installations	Design and size consumer gas installations	other minor changes throughout the unit Equivalent to CPCPGS4011A	
CPCPGS4022A Service Type A gas appliances	CPCPGS4012A Service Type A gas appliances	Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPGS4012A	N
CPCPIG2021A Design domestic urban irrigation systems	CPCPIG2011A Design domestic urban irrigation systems	Prerequisite unit added to unit Changes to descriptor, performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPIG2011A	N
CPCPIG3021A Set out, install and commission irrigation systems	CPCPIG3011A Set out, install and commission irrigation systems	Prerequisite unit updated Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPIG3011A	N
CPCPIG3022A Install and commission domestic irrigation pumps	CPCPIG3012A Install and commission domestic irrigation pumps	Prerequisite unit updated Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPIG3012A	N
CPCPMS2021A Assemble mechanical services components	CPCPMS2011A Assemble mechanical services components	Prerequisite unit updated Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPMS2011A	N
CPCPMS3031A Fabricate and install steel pressure piping	CPCPMS3011A Fabricate and install steel pressure piping	Prerequisite unit updated Changes to performance criteria, required skills and knowledge, range statement Not equivalent to CPCPMS3011A	N

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Unit code and title in V8 Training Package	Relationship to units in V7 CPC08	Comments in relation to previous version of this Training Package	Equivalent / Not equivalent
CPCPMS3032A Select and fit insulation and sheathing	CPCPMS3012A Select and fit insulation and sheathing	Prerequisite unit updated Changes to performance criteria, required skills, range statement and critical aspects Not equivalent to CPCPMS3012A	N
CPCPMS3033A Install small bore heating systems	CPCPMS3013A Install small bore heating systems	Prerequisite unit updated Minor changes to unit Not equivalent to CPCPMS3013A	N
CPCPMS3034A Install medical gas pipeline systems	CPCPMS3014A Install medical gas pipeline systems	Prerequisite unit updated Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPMS3014A	N
CPCPMS3035A Install and test ducting systems	CPCPMS3015A Install and test ducting systems	Prerequisite unit updated Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPMS3015A	N
CPCPMS3036A Install air handling units	CPCPMS3016A Install air handling units	Prerequisite unit updated Changes to descriptor, performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPMS3016A	N
CPCPMS3037A Install and test split system air conditioning	CPCPMS3017A Install and test split system air conditioning	Prerequisite unit updated Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPMS3017A	N
CPCPMS3038A Install air conditioning control equipment	CPCPMS3018A Install air conditioning control equipment	Prerequisite unit updated Changes to performance criteria, required skills and knowledge,	N

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Unit code and title in V8 Training Package	Relationship to units in V7 CPC08	Comments in relation to previous version of this Training Package	Equivalent / Not equivalent
		range statement and critical aspects Not equivalent to CPCPMS3018A	
CPCPMS3039A Maintain mechanical services equipment	CPCPMS3019A Maintain mechanical services equipment	Prerequisite unit updated Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPMS3019A	N
CPCPMS3040A Install and maintain evaporative air cooling systems	CPCPMS3020A Install and maintain evaporative air cooling systems	Prerequisite unit updated Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPMS3020A	N
CPCPMS3041A Install domestic solid fuel burning appliances	CPCPMS3021A Install domestic solid fuel burning appliances	Prerequisite unit updated Minor changes throughout the unit Not equivalent to CPCPMS3021A	N
CPCPMS4022A Commission air and water systems	CPCPMS4002A Commission air and water systems	Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPMS4002A	N
CPCPMS4023A Design compressed air systems	CPCPMS4003A Design compressed air systems	Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPMS4003A	N
CPCPMS4011B Design, size and lay out heating and cooling systems	CPCPMS4011A Design, size and lay out heating and cooling systems	Minor changes throughout the unit Equivalent to CPCPMS4011A	E
CPCPMS5010A Design steam generation and distribution systems	CPCPMS5000A Design steam distribution systems	Changes to unit title, descriptor, performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPMS5000A	N

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Unit code and title in V8 Training Package	Relationship to units in V7 CPC08	Comments in relation to previous version of this Training Package	Equivalent / Not equivalent
CPCPMS5011A Design air conditioning and ventilation systems	CPCPMS5001A Design air conditioning and ventilation systems	Changes to unit descriptor, application, performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPMS5001A	N
CPCPMS5012A Design sound attenuated hydraulic services	CPCPMS5002A Design sound attenuated hydraulic services	Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPMS5002A	N
CPCPMS5013A Design hydronic heating and cooling systems	CPCPMS5003A Design hydronic heating and cooling systems	Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPMS5003A	N
CPCPPS5000B Design gas bulk storage systems	CPCPPS5000A Design gas bulk storage systems	Minor changes throughout the unit Equivalent to CPCPPS5000A	E
CPCPPS5001B Design industrial gas systems	CPCPPS5001A Design industrial gas systems	Minor changes throughout the unit Equivalent to CPCPPS5001A	E
CPCPPS5002B Design gas reticulation systems	CPCPPS5002A Design gas reticulation systems	Minor changes throughout the unit Equivalent to CPCPPS5002A	E
CPCPPS5023A Design solar water heating systems	CPCPPS5003A Design solar water heating systems	Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPPS5003A	N
CPCPPS5024A Conduct a water audit and identify water-saving initiatives	CPCPPS5004A Conduct a water audit and identify water-saving initiatives	Changes to unit descriptor, application, performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPPS5004A	N
CPCPPS5025A Design grey water re-use systems	CPCPPS5005A Design grey water re-use systems in	Changes to unit title, descriptor, application, performance criteria, required skills and knowledge,	N

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Unit code and title in V8 Training Package	Relationship to units in V7 CPC08	Comments in relation to previous version of this Training Package	Equivalent / Not equivalent
	sewered areas	range statement and critical aspects Not equivalent to CPCPPS5005A	
CPCPPS5026A Design rainwater collection, storage, distribution and re-use systems	CPCPPS5006A Design rainwater collection, storage, distribution and re-use systems	Changes to unit descriptor, performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPPS5006A	N
CPCPPS5027A Design irrigation systems	CPCPPS5007A Design irrigation systems	Changes to unit descriptor, application, performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPPS5007A	N
CPCPPS5028A Design trade waste pre-treatment systems	CPCPPS5008A Design trade waste pre-treatment systems	Changes to unit descriptor, performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPPS5008A	N
CPCPPS5009B Analyse and report on technical plumbing systems	CPCPPS5009A Analyse and report on technical plumbing systems	Minor changes throughout the unit Equivalent to CPCPPS5009A	E
CPCPPS5030A Design pump systems	CPCPPS5010A Design pump systems	Changes to unit descriptor, performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPPS5010A	N
CPCPPS5011B Coordinate services and penetrations within a building	CPCPPS5011A Coordinate services and penetrations within a building	Minor changes throughout the unit Equivalent to CPCPPS5011A	E
CPCPPS5032A Design siphonic stormwater drainage systems	CPCPPS5012A Design siphonic stormwater drainage systems	Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPPS5012A	N

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Unit code and title in V8 Training Package	Relationship to units in V7 CPC08	Comments in relation to previous version of this Training Package	Equivalent / Not equivalent
CPCPPS5033A Design vacuum sewerage systems	CPCPPS5013A Design vacuum sewerage systems	Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPPS5013A	N
CPCPPS5014A Locate and maintain piping systems	CPCPPS5014A Locate and maintain piping systems	No change	E
CPCPPS5015B Inspect plumbing and drainage systems	CPCPPS5015A Inspect plumbing and drainage systems	Addition of sustainability content to performance criterion Minor editorial changes throughout Equivalent to CPCPPS5015A	E
CPCPRF2022A Select and install roof sheeting and wall cladding	CPCPRF2012A Select and install roof sheeting and wall cladding	Prerequisite unit updated Minor changes throughout the unit Not equivalent to CPCPRF2012A	N
CPCPRF2023A Collect and store roof water	CPCPRF2013A Collect and store roof water	Prerequisite unit updated Minor changes throughout the unit Not equivalent to CPCPRF2013A	N
CPCPRF2024A Fabricate roof coverings for curved structures	CPCPRF2014A Fabricate roof coverings for curved structures	Prerequisite unit updated Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPRF2014A	N
CPCPRF3021A Receive roofing materials	CPCPRF3011A Receive roofing materials	Prerequisite unit updated Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPRF3011A	N
CPCPRF3022A Fabricate and install roof drainage components	CPCPRF3012A Fabricate and install roof drainage components	Prerequisite unit updated Minor changes throughout the unit Not equivalent to CPCPRF3012A	N

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Unit code and title in V8 Training Package	Relationship to units in V7 CPC08	Comments in relation to previous version of this Training Package	Equivalent / Not equivalent
CPCPRF3023A Fabricate and install external flashings	CPCPRF3013A Fabricate and install external flashings	Prerequisite unit updated Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPRF3013A	N
CPCPRF3024A Install roof components	CPCPRF3014A Install roof components	Prerequisite unit updated Minor changes throughout unit, including addition of photovoltaic (solar) panels to range statement Not equivalent to CPCPRF3014A	N
CPCPRF3025A Install roof coverings to curved roof structures	CPCPRF3015A Install roof coverings to curved roof structures	Prerequisite unit updated Minor changes throughout the unit Not equivalent to CPCPRF3015A	N
CPCPRF3026A Install composite roof systems	CPCPRF3016A Install composite roof systems	Prerequisite unit updated Minor changes throughout the unit Not equivalent to CPCPRF3016A	N
CPCPRF4011B Design and size roof drainage systems	CPCPRF4011A Design and size roof drainage systems	Minor changes throughout the unit Equivalent to CPCPRF4011A	E
CPCPSN3011B Plan layout of a residential sanitary plumbing system	CPCPSN3011A Plan layout of a residential sanitary plumbing system	Minor changes throughout the unit Equivalent to CPCPSN3011A	E
CPCPSN3022A Install discharge pipes	CPCPSN3012A Install discharge pipes	Prerequisite unit updated Minor changes throughout the unit Not equivalent to CPCPSN3012A	N
CPCPSN3023A Fabricate and install sanitary stacks	CPCPSN3013A Fabricate and install sanitary stacks	Prerequisite unit updated Minor changes throughout the unit Not equivalent to CPCPSN3013A	N
CPCPSN3024A	CPCPSN3014A	Prerequisite unit updated	N

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Unit code and title in V8 Training Package	Relationship to units in V7 CPC08	Comments in relation to previous version of this Training Package	Equivalent / Not equivalent
Install and fit off sanitary fixtures	Install and fit off sanitary fixtures	Minor changes throughout the unit Not equivalent to CPCPSN3014A	
CPCPSN3025A Install pre-treatment facilities	CPCPSN3015A Install pre-treatment facilities	Prerequisite unit updated Minor changes throughout the unit Not equivalent to CPCPSN3015A	N
CPCPSN3026A Install sewerage pumpsets	CPCPSN3016A Install sewerage pump sets	Minor change to unit title Prerequisite unit updated Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPSN3016A	N
CPCPSN4011B Design and size sanitary plumbing systems	CPCPSN4011A Design and size sanitary plumbing systems	Minor changes throughout the unit Equivalent to CPCPSN4011A	E
CPCPWT3020A Connect and install storage tanks to a domestic water supply	CPCPWT3010A Connect and install storage tanks to a domestic water supply	Prerequisite unit updated Minor changes throughout the unit Not equivalent to CPCPWT3010A	N
CPCPWT3021A Set out and install water services	CPCPWT3011A Set out and install water services	Prerequisite unit updated Minor changes throughout the unit Not equivalent to CPCPWT3011A	N
CPCPWT3022A Install and adjust water service controls and devices	CPCPWT3012A Install and adjust water service controls and devices	Prerequisite unit updated Minor changes throughout the unit Not equivalent to CPCPWT3012A	N
CPCPWT3023A Install and commission water heating systems	CPCPWT3013A Install and commission water heating systems	Prerequisite unit updated Minor changes throughout the unit Not equivalent to CPCPWT3013A	N
CPCPWT3024A	CPCPWT3014A	Prerequisite unit updated	N

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Unit code and title in V8 Training Package	Relationship to units in V7 CPC08	Comments in relation to previous version of this Training Package	Equivalent / Not equivalent
Install and maintain domestic water treatment equipment	Install and maintain domestic water treatment equipment	Minor changes throughout the unit Not equivalent to CPCPWT3014A	
CPCPWT3025A Install water pumpsets	CPCPWT3015A Install water pump sets	Prerequisite unit updated Minor changes throughout the unit and to unit title Not equivalent to CPCPWT3015A	N
CPCPWT3026A Fit off and commission heated and cold water services	CPCPWT3016A Fit off and commission heated and cold water services	Prerequisite unit updated Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPWT3016A	N
CPCPWT3027A Connect irrigation systems from drinking water supply	CPCPWT3017A Connect irrigation systems from drinking water supply	Prerequisite unit updated Minor changes throughout the unit Not equivalent to CPCPWT3017A	N
CPCPWT3028A Install water services	CPCPWT3018A Install water service	Prerequisite unit updated Minor changes throughout the unit, including to unit title Not equivalent to CPCPWT3018A	N
CPCPWT3029A Install water pipe systems	CPCPWT3019A Install water pipe systems	Prerequisite unit updated Changes to performance criteria, required skills, range statement and critical aspects Not equivalent to CPCPWT3019A	N
CPCPWT3030A Install home fire sprinkler systems		New unit	
CPCPWT4011B Design and size heated and cold water services and	CPCPWT4011A Design and size heated and cold water services and	Minor changes throughout the unit Equivalent to CPCPWT4011A	E

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Unit code and title in V8 Training Package	Relationship to units in V7 CPC08	Comments in relation to previous version of this Training Package	Equivalent / Not equivalent
systems	systems		
CPCPWT4022A Commission and maintain backflow prevention devices	CPCPWT4012A Commission and maintain backflow prevention devices	Changes to performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPWT4012A	N
CPCPWT4023A Commission and maintain hot and heated water temperature control devices	CPCPWT4013A Commission and maintain heated water temperature control devices	Changes to unit title, descriptor, performance criteria, required skills and knowledge, range statement and critical aspects Not equivalent to CPCPWT4013A	N

No further native units of competency were changed, added or removed as a result of the changes made in Version 8.

Mapping of CPC08v7 units of competency

Mapping CPC08 Version 7 units of competency to Version 6.1

Unit code and title in V7 Training Package	Relationship to units in V6.1 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
	CPCCDE3012A Encapsulate and remove asbestos	Unit deleted	
CPCCDE3014A Remove non-friable asbestos	CPCCDE3012A Encapsulate and remove asbestos	New unit Replaces CPCCDE3012A	N
CPCCDE3015A Remove friable asbestos	CPCCDE3012A Encapsulate and remove asbestos	New unit Replaces CPCCDE3012A	N
	CPCCBC4023A Plan and undertake site	Unit deleted	

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Unit code and title in V7 Training Package	Relationship to units in V6.1 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
	inspection and assessment of asbestos products and materials		
CPCCBC4051A Supervise asbestos removal		New unit	
CPCCBC5014A Conduct asbestos assessment associated with removal	CPCCBC4023A Plan and undertake site inspection and assessment of asbestos products and materials	New unit	N

No further native units of competency were changed, added or removed as a result of the changes made in Version 7.

Mapping of CPC08v6 units of competency

Mapping of CPC08 Version 6.1 units of competency to Version 6

There were no changes made to the content of CPC08 Version 6 units of competency in this ISC upgrade and so a mapping table is not provided.

The following five units were assigned a different unit code (while retaining the same unit title) in response to stakeholder implementation advice with regard to the use of previous version unit codes:

- CPCPGS3011A was re-coded to CPCPGS3031A
- CPCPGS3012A was re-coded to CPCPGS3032A
- CPCPGS3013A was re-coded to CPCPGS3033A
- CPCPGS3014A was re-coded to CPCPGS3034A
- CPCPGS3015A was re-coded to CPCPGS3035A.

Minor editorial changes were made to unit code or title references in CPC08 Version 6 qualifications to ensure consistent listing of the unit code or title of:

- CPCPCM2028A Cut and join sheet metal
- CPCPCM2029A Cut using oxy-LPG-acetylene equipment
- CPCPCM2032A Weld using oxy-acetylene equipment
- CPCPWT3016A Fit off and commission heated and cold water services.

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Mapping of CPC08 Version 6 units of competency to Version 5

Unit code and title in V6 Training Package	Relationship to units in V5 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
CPCCBC4006B Select, procure and store construction materials for low rise projects	CPCCBC4006A Select, procure and store construction materials for low rise projects	Sustainability content added to range statement Equivalent to CPCCBC4006A	E
CPCCBC4008B Conduct on-site supervision of building and construction projects	CPCCBC4008A Conduct on-site supervision of building and construction projects	Sustainability content added to range statement Equivalent to CPCCBC4008A	E
CPCCBC4009B Apply legal requirements to building and construction projects	CPCCBC4009A Apply legal requirements to building and construction projects	Missing application information added Equivalent to CPCCBC4009A	E
CPCCBC4010B Apply structural principles to residential low rise constructions	CPCCBC4010A Apply structural principles to residential low rise constructions	Sustainability content added to performance criterion Equivalent to CPCCBC4010A	E
CPCCBC4011B Apply structural principles to commercial low rise constructions	CPCCBC4011A Apply structural principles to commercial low rise constructions	Sustainability content added to performance criterion Equivalent to CPCCBC4011A	E
CPCCBC4027B Establish a basis for sales consulting	CPCCBC4027A Establish a basis for sales consulting	Minor changes to required skills in response to addition of sustainability content Equivalent to CPCCBC4027A	E
CPCCBC4029B Apply construction	CPCCBC4029A Apply construction	Sustainability content	E

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Unit code and title in V6 Training Package	Relationship to units in V5 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
information to the sales process	information to the sales process	added to required skills Equivalent to CPCCBC4029A	
CPCCBC5006B Apply site surveys and set-out procedures to medium rise building projects	CPCCBC5006A Apply site surveys and set-out procedures to medium rise building projects	Missing application information added Equivalent to CPCCBC5006A	E
CPCCBC5010B Manage construction work	CPCCBC5010A Manage construction work	Sustainability content added to required knowledge Equivalent to CPCCBC5010A	E
CPCCBL3018A Install aerated autoclaved concrete products	CPCCBL3008A Install aerated autoclaved concrete products	Prerequisite unit CPCCOHS2001A added Unit outcome altered Not equivalent to CPCCBL3008A	N
CPCCCA2011A Handle carpentry materials	CPCCCA2001A Handle carpentry materials	Prerequisite unit CPCCOHS2001A added Unit outcome altered Not equivalent to CPCCCA2001A	N
CPCCCA3007B Construct pitched roofs	CPCCCA3007A Construct pitched roofs	Item added to required knowledge section Unit outcome not altered Equivalent to CPCCCA3007A	E
CPCCCM1011A Undertake basic estimation and costing	CPCCCM1001A Undertake basic estimation and costing	Prerequisite unit CPCCOHS2001A removed Unit outcome altered Not equivalent to CPCCCM1001A	N

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Unit code and title in V6 Training Package	Relationship to units in V5 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
CPCCCM1012A Work effectively and sustainably in the construction industry	CPCCCM1002A Work effectively and sustainably in the construction industry	Prerequisite unit CPCCOHS2001A removed Sustainability content added to range statement Unit outcome altered Not equivalent to CPCCCM1002A	N
CPCCCM1013A Plan and organise work	CPCCCM1003A Plan and organise work	Prerequisite unit CPCCOHS2001A removed Unit outcome altered Not equivalent to CPCCCM1003A	N
CPCCCM1014A Conduct workplace communication	CPCCCM1004A Conduct workplace communication	Prerequisite unit CPCCOHS2001A removed Unit outcome altered Not equivalent to CPCCCM1004A	N
CPCCCM1015A Carry out measurements and calculations	CPCCCM1005A Carry out measurements and calculations	Prerequisite unit CPCCOHS2001A removed Unit outcome altered Not equivalent to CPCCCM1005A	N
CPCCCM2003B Calculate and cost construction work	CPCCCM2003A Calculate and cost construction work	Sustainability content added to required knowledge and range statement Equivalent to CPCCCM2003A	E
CPCCCM2010A Work safely at heights	CPCCCM1006A Work safely at heights	Unit code changed to address anomaly of a unit at nominal AQF level 1 having a level 2 prerequisite Unit outcome not altered	E

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Unit code and title in V6 Training Package	Relationship to units in V5 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
		Equivalent to CPCCCM1006A	
CPCCCM2011A Carry out tilt-up work safely	CPCCCM1007A Carry out tilt-up work safely	AQF nominal level of unit increased from 1 to 2 to allow a level 2 OHS unit as prerequisite in view of nature of work associated with unit Unit outcome not altered Equivalent to CPCCCM1007A	E
CPCCCM3001B Operate elevated work platforms	CPCCCM3001A Operate elevated work platforms	Unit version upgrade to reflect the change of code but not content of prerequisite unit Unit outcome not altered Equivalent to CPCCCM3001A	E
CPCCCO2011A Handle concreting materials	CPCCCO2001A Handle concreting materials	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A Unit outcome altered Not equivalent to CPCCCO2001A	N
CPCCCO2012A Use concreting tools and equipment	CPCCCO2002A Use concreting tools and equipment	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A Unit outcome altered Not equivalent to CPCCCO2002A	N
CPCCCO2013A Carry out concreting to simple forms	CPCCCO2003A Carry out concreting to simple forms	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A	N

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Unit code and title in V6 Training Package	Relationship to units in V5 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
		Unit outcome altered Not equivalent to CPCCCO2003A	
CPCCCO2014A Carry out concrete work	CPCCCO2004A Carry out concrete work	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A Unit outcome altered Not equivalent to CPCCCO2004A	N
CPCCCO3021A Place concrete	CPCCCO3001A Place concrete	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A Unit outcome altered Not equivalent to CPCCCO3001A	N
CPCCCO3022A Finish concrete	CPCCCO3002A Finish concrete	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A Unit outcome altered Not equivalent to CPCCCO3002A	N
CPCCCO3023A Cure concrete	CPCCCO3003A Cure concrete	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A Unit outcome altered Not equivalent to CPCCCO3003A	N
CPCCCO3024A Carry out decorative finishes to concrete	CPCCCO3004A Carry out decorative finishes to concrete	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A	N

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Unit code and title in V6 Training Package	Relationship to units in V5 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
		Unit outcome altered Not equivalent to CPCCCO3004A	
CPCCCO3025A Resurface concrete	CPCCCO3005A Resurface concrete	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A Unit outcome altered Not equivalent to CPCCCO3005A	N
CPCCCO3026A Carry out repair and rectification of concrete	CPCCCO3006A Carry out repair and rectification of concrete	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A Unit outcome altered Not equivalent to CPCCCO3006A	N
CPCCCO3027A Cut and core concrete	CPCCCO3007A Cut and core concrete	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A Unit outcome altered Not equivalent to CPCCCO3007A	N
CPCCCO3028A Carry out tilt panel construction	CPCCCO3008A Carry out tilt panel construction	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A Unit outcome altered Not equivalent to CPCCCO3008A	N
CPCCCO3029A Apply and finish sprayed concrete	CPCCCO3009A Apply and finish sprayed concrete	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A	N

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Unit code and title in V6 Training Package	Relationship to units in V5 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
		Unit outcome altered Not equivalent to CPCCCO3009A	
CPCCCO3030A Carry out high performance concreting	CPCCCO3010A Carry out high performance concreting	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A Unit outcome altered Not equivalent to CPCCCO3010A	N
CPCCCO3031A Conduct off-form vertical concrete operations	CPCCCO3011A Conduct off-form vertical concrete operations	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A Unit outcome altered Not equivalent to CPCCCO3011A	N
CPCCCO3032A Conduct concrete boom delivery operations	CPCCCO3012A Conduct concrete boom delivery operations	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A Unit outcome altered Not equivalent to CPCCCO3012A	N
CPCCCO3033A Slump test concrete	CPCCCO3013A Slump test concrete	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A Unit outcome altered Not equivalent to CPCCCO3013A	N
CPCCCO3034A Conduct concrete agitator truck operations	CPCCCO3014A Conduct concrete agitator truck operations	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A	N

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Unit code and title in V6 Training Package	Relationship to units in V5 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
		Unit outcome altered Not equivalent to CPCCCO3014A	
CPCCDE2011A Use demolition tools and equipment	CPCCDE2001A Use demolition tools and equipment	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A Unit outcome altered Not equivalent to CPCCDE2001A	N
CPCCDE2012A Carry out manual general demolition	CPCCDE2002A Carry out manual general demolition	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A Unit outcome altered Not equivalent to CPCCDE2002A	N
CPCCDE3011A Carry out mechanical general demolition	CPCCDE3001A Carry out mechanical general demolition	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A Unit outcome altered Not equivalent to CPCCDE3001A	N
CPCCDE3012A Encapsulate and remove asbestos	CPCCDE3002A Encapsulate and remove asbestos	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A Unit outcome altered Not equivalent to CPCCDE3002A	N
CPCCDE3013A Operate a crushing plant	CPCCDE3003A Operate a crushing plant	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A	N

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Unit code and title in V6 Training Package	Relationship to units in V5 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
		Unit outcome altered Not equivalent to CPCCDE3003A	
CPCCDO2011A Handle and use dogging tools and equipment	CPCCDO2001A Handle and use dogging tools and equipment	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A Unit outcome altered Not equivalent to CPCCDO2001A	N
CPCCDO3011A Perform dogging	CPCCDO3001A Perform dogging	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A Unit outcome altered Not equivalent to CPCCDO3001A	N
CPCCDO3012A Perform crane scheduling	CPCCDO3002A Perform crane scheduling	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A Unit outcome altered Not equivalent to CPCCDO3002A	N
CPCCJS3011A Design and set out stairs	CPCCJS3001A Design and set out stairs	Prerequisite unit requirement (CPCCOHS2001A) added to unit Unit outcome altered Not equivalent to CPCCJS3001A	N
CPCCPD2011A Handle painting and decorating materials	CPCCPD2001A Handle painting and decorating materials	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A	N

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Unit code and title in V6 Training Package	Relationship to units in V5 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
		Unit outcome altered Not equivalent to CPCCPD2001A	
CPCCPD2012A Use painting and decorating tools and equipment	CPCCPD2002A Use painting and decorating tools and equipment	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A Unit outcome altered Not equivalent to CPCCPD2002A	N
CPCCPD2013A Remove and replace doors and door and window components	CPCCPD2003A Remove and replace doors an d door and window components	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A Unit outcome altered Not equivalent to CPCCPD2003A	N
CPCCPD3021A Prepare surfaces for painting	CPCCPD3001A Prepare surfaces for painting	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A Unit outcome altered Not equivalent to CPCCPD3001A	N
CPCCPD3022A Apply paint by brush and roller	CPCCPD3002A Apply paint by brush and roller	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A Unit outcome altered Not equivalent to CPCCPD3002A	N
CPCCPD3023A Apply texture coat paint finishes by brush, roller and	CPCCPD3003A Apply texture coat paint finishes by brush, roller and spray	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A	N

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Unit code and title in V6 Training Package	Relationship to units in V5 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
spray		Unit outcome altered Not equivalent to CPCCPD3003A	
CPCCPD3024A Apply paint by spray	CPCCPD3004A Apply paint by spray	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A Unit outcome altered Not equivalent to CPCCPD3004A	N
CPCCPD3025A Match specified paint colour	CPCCPD3005A Match specified paint colour	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A Unit outcome altered Not equivalent to CPCCPD3005A	N
CPCCPD3026A Apply stains and clear timber finishes	CPCCPD3006A Apply stains and clear timber finishes	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A Unit outcome altered Not equivalent to CPCCPD3006A	N
CPCCPD3027A Apply wallpaper	CPCCPD3007A Apply wallpaper	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A Unit outcome altered Not equivalent to CPCCPD3007A	N
CPCCPD3028A Apply decorative paint finishes	CPCCPD3008A Apply decorative paint finishes	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A	N

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Unit code and title in V6 Training Package	Relationship to units in V5 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
		Unit outcome altered Not equivalent to CPCCPD3008A	
CPCCPD3029A Remove graffiti and apply protective coatings	CPCCPD3009A Remove graffiti and apply protective coatings	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A Unit outcome altered Not equivalent to CPCCPD3009A	N
CPCCPD3030A Apply protective paint coating systems	CPCCPD3010A Apply protective paint coating systems	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A Unit outcome altered Not equivalent to CPCCPD3010A	N
CPCCPD3031A Implement safe lead paint and asbestos work practices in the painting industry	CPCCPD3011A Apply lead paint and asbestos management	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A Unit name changed to reflect the work function more accurately Unit outcome altered Not equivalent to CPCCPD3011A	N
CPCCPD3032A Apply advanced wallpaper techniques	CPCCPD3012A Apply advanced wallpaper techniques	Prerequisite requirement changed from CPCCOHS1001A to CPCCOHS2001A Unit outcome altered Not equivalent to CPCCPD3012A	N
CPCCPD3033A	CPCCPD3013A	Prerequisite requirement	N

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Unit code and title in V6 Training Package	Relationship to units in V5 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
Apply intumescent coatings	Apply intumescent coatings	changed from CPCCOHS1001A to CPCCOHS2001A Unit outcome altered Not equivalent to CPCCPD3013A	
CPCCPD3034A Apply advanced decorative paint finishes	CPCCPD3014A Apply advanced decorative paint finishes	Prerequisite unit requirement (CPCCOHS2001A) added to unit Unit outcome altered Not equivalent to CPCCPD3014A	N
CPCCRI3012A Perform basic rigging	CPCCRI3002A Perform basic rigging	Prerequisite requirement changed from CPCCDO3001A to CPCCDO3011A Unit outcome altered Not equivalent to CPCCRI3002A	N
CPCCRI3013A Perform intermediate rigging	CPCCRI3003A Perform intermediate rigging	Prerequisite requirement changed from CPCCRI3002A to CPCCRI3012A Unit outcome altered Not equivalent to CPCCRI3003A	N
CPCCRI3014A Perform advanced structural steel erection	CPCCRI3004A Perform advanced structural steel erection	Prerequisite requirement changed from CPCCRI3002A to CPCCRI3012A Unit outcome altered Not equivalent to CPCCRI3004A	N
CPCCRI3015A	CPCCRI3005A	Prerequisite requirement	N

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Unit code and title in V6 Training Package	Relationship to units in V5 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
Perform advanced tilt-up slab erection	Perform advanced tilt-up slab erection	changed from CPCCRI3003A to CPCCRI3013A Unit outcome altered Not equivalent to CPCCRI3005A	
CPCCRI3016A Perform advanced tower crane erection	CPCCRI3006A Perform advanced tower crane erection	Prerequisite requirement changed from CPCCRI3003A to CPCCRI3013A Unit outcome altered Not equivalent to CPCCRI3006A	N
CPCCSV6006A Evaluate the use of concrete for residential and commercial buildings up to three storeys	CPCCSV6006A Evaluate the use of concrete for residential and commercial buildings up to three storeys	Method of assessment section added to unit Unit outcome not altered Equivalent to CPCSV6006A	E
CPCCVE1011A Undertake a basic construction project	CPCCVE1001A Undertake a basic construction project	Prerequisite unit CPCCOHS2001A removed Unit outcome altered Not equivalent to CPCCVE1001A	N
CPCPCM2021A Work effectively in the plumbing and services sector	CPCPCM2001A Work effectively in the plumbing and services sector	Changed prerequisite Unit outcome altered Not equivalent to CPCPCM2001A	N
CPCPCM2023A Carry out occupational health and safety requirements	CPCPCM2003A Carry out occupational health and safety requirements	Performance criteria added and changed Sustainability content added Unit outcome altered Not equivalent to	N

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Unit code and title in V6 Training Package	Relationship to units in V5 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
		CPCPCM2003A	
CPCPCM2025A Handle and store plumbing materials	CPCPCM2005A Handle and store plumbing materials	Changed prerequisite Unit outcome altered Not equivalent to CPCPCM2005A	N
CPCPCM2026A Use plumbing hand and power tools	CPCPCM2006A Use plumbing hand and power tools	Changed prerequisite Unit outcome altered Not equivalent to CPCPCM2006A	N
CPCPCM2027A Carry out levelling	CPCPCM2007A Carry out levelling	Changed prerequisite Unit outcome altered Not equivalent to CPCPCM2007A	N
CPCPCM2028A Cut and join sheet metal	CPCPCM2008A Cut and join sheet metal	Prerequisite unit (x1) requirement removed from unit Changed prerequisite Sustainability content added Unit outcome altered Not equivalent to CPCPCM2008A	N
CPCPCM2029A Cut using oxy-LPG-acetylene equipment	CPCPCM2009A Cut using oxy-LPG-acetylene equipment	Changed prerequisite Unit outcome altered Not equivalent to CPCPCM2009A	N
CPCPCM2030A Mark out materials	CPCPCM2010A Mark out materials	Changed prerequisite Unit outcome altered Not equivalent to CPCPCM2010A	N
CPCPCM2032A Weld using	CPCPCM2012A Weld using oxy-acetylene	Prerequisite unit (x1)	N

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Unit code and title in V6 Training Package	Relationship to units in V5 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
oxy-acetylene equipment	equipment	removed Changed remaining prerequisite Unit outcome altered Not equivalent to CPCPCM2012A	
CPCPCM2033A Weld using arc welding equipment	CPCPCM2013A Weld using arc welding equipment	Changed prerequisite Unit outcome altered Not equivalent to CPCPCM2013A	N
CPCPCM2034A Carry out simple concreting and rendering	CPCPCM2014A Carry out simple concreting and rendering	Changed prerequisite Unit outcome altered Not equivalent to CPCPCM2014A	N
CPCPCM2035A Work safely on roofs	CPCPCM2015A Work safely on roofs	Changed prerequisite Unit outcome altered Not equivalent to CPCPCM2015A	N
CPCPCM3011A Flash penetrations through roofs and walls	CPCPCM3001A Flash penetrations through roofs and walls	Changed prerequisite Unit outcome altered Not equivalent to CPCPCM3001A	N
CPCPCM3012A Weld plastic pipe using fusion method	CPCPCM3002A Weld plastic pipe using fusion method	Changed prerequisite Unit outcome altered Not equivalent to CPCPCM3002A	N
CPCPCM3013A Fabricate and install non-ferrous pressure piping	CPCPCM3003A Fabricate and install non-ferrous pressure piping	Changed prerequisite Unit outcome altered Not equivalent to CPCPCM3003A	N
CPCPCM5002B	CPCPCM5002A	Editorial change made by	E

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Unit code and title in V6 Training Package	Relationship to units in V5 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
Design complex stormwater and roof drainage systems	Design complex stormwater and roof drainage systems	inserting the missing 'Method of assessment' section Unit outcome not altered Equivalent to CPCPCM5002A	
CPCPCM5003B Design complex (non-solar) heated water systems	CPCPCM5003A Design complex (non-solar) hot water systems	Minor change to unit from hot to heated, including unit title Unit outcome not altered Equivalent to CPCPCM5003A	E
CPCPDR2011A Locate and clear blockages	CPCPDR2001A Locate and clear blockages	Changed prerequisite Unit outcome altered Not equivalent to CPCPDR2001A	N
CPCPDR2012A Install domestic treatment plants	CPCPDR2002A Install domestic treatment plants	Changed prerequisite Sustainability content added Unit outcome altered Not equivalent to CPCPDR2002A	N
CPCPDR2013A Maintain effluent disinfection systems	CPCPDR2003A Maintain effluent disinfection systems	Changed prerequisite Unit outcome altered Not equivalent to CPCPDR2003A	N
CPCPDR2014A Install stormwater and sub-soil drainage systems	CPCPDR2004A Install stormwater and sub-soil drainage systems	Changed prerequisite Unit outcome altered Not equivalent to CPCPDR2004A	N
CPCPDR2015A Drain work site	CPCPDR2005A Drain work site	Changed prerequisite Unit outcome altered	N

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Unit code and title in V6 Training Package	Relationship to units in V5 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
		Not equivalent to CPCPDR2005A	
CPCPDR2016A Install prefabricated inspection openings and enclosures	CPCPDR2006A Install prefabricated inspection openings and enclosures	Changed prerequisite Unit outcome altered Not equivalent to CPCPDR2006A	N
CPCPDR3011A Plan layout of a residential sanitary drainage system	CPCPDR3001A Plan layout of a residential external sanitary drainage system	'External' removed from unit title Sustainability content added Other minor changes Not equivalent to CPCPDR3001A	N
CPCPDR3012A Install below ground sanitary drainage systems	CPCPDR3002A Install below ground sanitary drainage systems	Changed prerequisite Sustainability content added Unit outcome altered Not equivalent to CPCPDR3002A	N
CPCPDR3013A Install on-site disposal systems	CPCPDR3003A Install on-site disposal systems	Changed prerequisite Sustainability content added Unit outcome altered Not equivalent to CPCPDR3003A	N
CPCPDR4011A Design and size sanitary drainage systems	CPCPDR4001A Plan, size and lay out sanitary drainage systems	Change to unit title, descriptor, element and performance criteria Sustainability content added Other minor changes Not equivalent to CPCPDR4001A	N

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Unit code and title in V6 Training Package	Relationship to units in V5 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
CPCPDR4012A Design and size stormwater drainage systems	CPCPDR4002A Plan, size and layout stormwater drainage systems	Change to unit title, descriptor, element, performance criteria and evidence guide Sustainability content added Other minor changes Not equivalent to CPCPDR4002A	N
CPCPDR4013A Design and size domestic treatment plant disposal systems	CPCPDR4003A Plan, size and lay out domestic treatment plant disposal systems	Change to unit title, descriptor and element Sustainability content added Other minor changes Not equivalent to CPCPDR4003A	N
CPCPFS2011A Connect static storage tanks for fixed fire protection systems	CPCPFS2001A Connect static storage tanks for fixed fire protection systems	Changed prerequisite Unit outcome altered Not equivalent to CPCPFS2001A	N
CPCPFS2012A Install portable fire equipment	CPCPFS2002A Install portable fire equipment	Changed prerequisite Unit outcome altered Not equivalent to CPCPFS2002A	N
CPCPFS3011A Fabricate and install fire hydrant and hose reel systems	CPCPFS3001A Fabricate and install fire hydrant and hose reel systems	Changed prerequisite Unit outcome altered Not equivalent to CPCPFS3001A	N
CPCPFS3012A Install distribution and range pipes	CPCPFS3002A Install distribution and range pipes	Changed prerequisite Unit outcome altered Not equivalent to CPCPFS3002A	N

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Unit code and title in V6 Training Package	Relationship to units in V5 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
CPCPFS3013A Fit off sprinkler heads, controls and ancillary equipment	CPCPFS3003A Fit off sprinkler heads, controls and ancillary equipment	Changed prerequisite Unit outcome altered Not equivalent to CPCPFS3003A	N
CPCPFS3014A Install control valve assemblies, actuating devices and local alarms	CPCPFS3004A Install control valve assemblies, actuating devices and local alarms	Changed prerequisite Unit outcome altered Not equivalent to CPCPFS3004A	N
CPCPFS3015A Test fire protection systems for pressure	CPCPFS3005A Test fire protection systems for pressure	Changed prerequisite Unit outcome altered Not equivalent to CPCPFS3005A	N
CPCPFS3016A Install special hazard systems	CPCPFS3006A Install special hazard systems	Changed prerequisite Unit outcome altered Not equivalent to CPCPFS3006A	N
CPCPFS3017A Install domestic and residential life safety sprinkler systems	CPCPFS3007A Install domestic and residential life safety sprinkler systems	Changed prerequisite Unit outcome altered Not equivalent to CPCPFS3007A	N
CPCPFS3018A Test and maintain fire hydrant and hose reel installations	CPCPFS3008A Test and maintain fire hydrant and hose reel installations	Changed prerequisite Unit outcome altered Not equivalent to CPCPFS3008A	N
CPCPFS3019A Test and maintain automatic fire sprinklers	CPCPFS3009A Test and maintain automatic fire sprinklers	Changed prerequisite Unit outcome altered Not equivalent to CPCPFS3009A	N
CPCPFS3020A Conduct basic functional testing of		New unit	

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Unit code and title in V6 Training Package	Relationship to units in V5 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
water-based fire-suppression systems			
CPCPFS3021A Inspect and test fire pumpsets		New unit	
CPCPFS3022A Conduct annual functional testing of complex water-based fire-suppression systems		New unit	
CPCPFS3023A Conduct functional water flow testing		New unit	
CPCPFS4011A Commission domestic and residential fire suppression sprinkler systems	CPCPFS4001A Commission domestic and residential fire suppression sprinkler systems	Prerequisite unit requirement removed from unit Unit outcome altered Not equivalent to CPCPFS4001A	N
CPCPFS4012A Commission and maintain special hazard fire suppression systems	CPCPFS4002A Commission and maintain special hazard fire suppression systems	Prerequisite unit (x2) requirement removed from unit Unit outcome altered Not equivalent to CPCPFS4002A	N
CPCPFS4013A Commission fire system pump sets	CPCPFS4003A Commission fire system pump sets	Prerequisite unit requirement removed from unit Unit outcome altered Not equivalent to CPCPFS4003A	N
CPCPFS4014A Design residential and	CPCPFS4004A Design residential and	Prerequisite unit requirement removed from	N

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Unit code and title in V6 Training Package	Relationship to units in V5 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
domestic fire sprinkler systems	domestic fire sprinkler systems	unit Unit outcome altered Not equivalent to CPCPFS4004A	
CPCPGS3011A Install gas piping systems	CPCPGS3001A Install gas piping systems	Prerequisite unit changed Unit outcome altered Not equivalent to CPCPGS3001A	N
CPCPGS3012A Size consumer gas piping systems	CPCPGS3002A Size consumer gas piping systems	Prerequisite unit added Unit outcome altered Not equivalent to CPCPGS3002A	N
CPCPGS3013A Install and commission Type A gas appliances	CPCPGS3003A Install and commission Type A gas appliances	Prerequisite unit changed Unit outcome altered Not equivalent to CPCPGS3003A	N
CPCPGS3014A Install LPG storage of aggregate storage capacity up to 500 litres	CPCPGS3004A Install LPG storage of aggregate storage capacity up to 500 litres	Prerequisite unit changed Unit outcome altered Not equivalent to CPCPGS3004A	N
CPCPGS3015A Install LPG storage of aggregate storage capacity exceeding 500 litres and less than 8KL	CPCPGS3005A Install LPG storage of aggregate storage capacity exceeding 500 litres and less than 8KL	Prerequisite unit removed Prerequisite changed Unit outcome altered Not equivalent to CPCPGS3005A	N
CPCPGS3016A Install LPG systems in caravans, mobile homes, water craft and mobile workplaces	CPCPGS3006A Install LPG systems in caravans, mobile homes, water craft and mobile workplaces	Prerequisite unit changed Unit outcome altered Not equivalent to CPCPGS3006A	N
CPCPGS3017A	CPCPGS3007A	Prerequisite unit changed	N

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Unit code and title in V6 Training Package	Relationship to units in V5 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
Install gas detection devices	Install gas detection devices	Unit outcome altered Not equivalent to CPCPGS3007A	
CPCPGS3018A Install gas pressure control equipment	CPCPGS3008A Install gas pressure control equipment	Prerequisite unit changed Unit outcome altered Not equivalent to CPCPGS3008A	N
CPCPGS3019A Install Type A gas appliance flues	CPCPGS3009A Install Type A gas appliance flues	Prerequisite unit changed Unit outcome altered Not equivalent to CPCPGS3009A	N
CPCPGS3020A Install Type B gas appliance flues	CPCPGS3010A Install Type B gas appliance flues	Prerequisite unit changed Unit outcome altered Not equivalent to CPCPGS3010A	N
CPCPGS3021A Purge consumer piping	CPCPGS3011A Purge consumer piping	Prerequisite unit changed Unit outcome altered Not equivalent to CPCPGS3011A	N
CPCPGS3022A Maintain Type A gas appliances	CPCPGS3012A Maintain Type A gas appliances	Prerequisite unit changed Unit outcome altered Not equivalent to CPCPGS3012A	N
CPCPGS3023A Disconnect and reconnect Type A gas appliances	CPCPGS3013A Disconnect and reconnect Type A gas appliances	Prerequisite unit changed Unit outcome altered Not equivalent to CPCPGS3013A	N
CPCPGS3024A Calculate and install natural ventilation for Type A gas appliances	CPCPGS3014A Calculate and install natural ventilation for Type A gas appliances	Prerequisite unit changed Unit outcome altered Not equivalent to CPCPGS3014A	N

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Unit code and title in V6 Training Package	Relationship to units in V5 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
CPCPGS3025A Install subsidiary gas meters	CPCPGS3015A Install subsidiary gas meters	Prerequisite unit changed Unit outcome altered Not equivalent to CPCPGS3015A	N
CPCPGS4011A Design and size consumer gas installations	CPCPGS4001A Plan, size and layout consumer gas installations	Unit title changed Sustainability content added Unit outcome altered Not equivalent to CPCPGS4001A	N
CPCPGS4012A Service Type A gas appliances	CPCPGS4002A Service Type A gas appliances	Prerequisite unit (x2) requirement removed from unit Unit outcome altered Not equivalent to CPCPGS4002A	N
CPCPIG2011A Design domestic urban irrigation systems	CPCPIG2001A Design domestic urban irrigation systems	Prerequisite unit (x3) requirement removed from unit Unit outcome altered Not equivalent to CPCPIG2001A	N
CPCPIG3011A Set out, install and commission irrigation systems	CPCPIG3001A Set out, install and commission irrigation systems	Prerequisite unit (x2) requirement removed from unit Remaining prerequisite CPCPCM2023A recoded to reflect changed unit Unit outcome altered Not equivalent to CPCPIG3001A	N
CPCPIG3012A Install and commission domestic irrigation	CPCPIG3002A Install and commission domestic irrigation	Prerequisite unit (x3) requirement removed from unit	N

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Unit code and title in V6 Training Package	Relationship to units in V5 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
pumps	pumps	Remaining prerequisite CPCPCM2023A recoded to reflect changed unit Unit outcome altered Not equivalent to CPCPIG3002A	
CPCPMS2011A Assemble mechanical services components	CPCPMS2001A Assemble mechanical services components	Prerequisite unit changed Unit outcome altered Not equivalent to CPCPMS2001A	N
CPCPMS3011A Fabricate and install steel pressure piping	CPCPMS3001A Fabricate and install steel pressure piping	Prerequisite unit (x1) requirement removed from unit Remaining prerequisite CPCPCM2023A recoded to reflect changed unit Unit outcome altered Not equivalent to CPCPMS3001A	N
CPCPMS3012A Select and fit insulation and sheathing	CPCPMS3002A Select and fit insulation and sheathing	Prerequisite CPCPCM2023A recoded to reflect changed unit Unit outcome altered Not equivalent to CPCPMS3002A	N
CPCPMS3013A Install small bore heating systems	CPCPMS3003A Install small bore heating systems	Prerequisite CPCPCM2023A recoded to reflect changed unit Unit outcome altered Not equivalent to CPCPMS3003A	N
CPCPMS3014A Install medical gas pipeline systems	CPCPMS3004A Install medical gas pipeline systems	Prerequisite unit (x1) requirement removed from unit	N

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Unit code and title in V6 Training Package	Relationship to units in V5 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
		Remaining prerequisite CPCPCM2023A recoded to reflect changed unit Unit outcome altered Not equivalent to CPCPMS3004A	
CPCPMS3015A Install and test ducting systems	CPCPMS3005A Install and test ducting systems	Prerequisite CPCPCM2023A recoded to reflect changed unit Unit outcome altered Not equivalent to CPCPMS3005A	N
CPCPMS3016A Install air handling units	CPCPMS3006A Install air handling units	Prerequisite CPCPCM2023A recoded to reflect changed unit Unit outcome altered Not equivalent to CPCPMS3006A	N
CPCPMS3017A Install and test split system air conditioning	CPCPMS3007A Install and test split system air conditioning	Prerequisite CPCPCM2023A recoded to reflect changed unit Unit outcome altered Not equivalent to CPCPMS3007A	N
CPCPMS3018A Install air conditioning control equipment	CPCPMS3008A Install air conditioning control equipment	Prerequisite CPCPCM2023A recoded to reflect changed unit Unit outcome altered Not equivalent to CPCPMS3008A	N
CPCPMS3019A Maintain mechanical services equipment	CPCPMS3009A Maintain mechanical services equipment	Prerequisite CPCPCM2023A recoded to reflect changed unit Unit outcome altered	N

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Unit code and title in V6 Training Package	Relationship to units in V5 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
		Not equivalent to CPCPMS3009A	
CPCPMS3020A Install and maintain evaporative air cooling systems	CPCPMS3010A Install and maintain evaporative air cooling systems	Prerequisite unit (x1) requirement removed Remaining prerequisite CPCPCM2023A recoded to reflect changed unit Unit outcome altered Not equivalent to CPCPMS3010A	N
CPCPMS3021A Install domestic solid fuel burning appliances		New unit	
CPCPRF2012A Select and install roof sheeting and wall cladding	CPCPRF2002A Select and install roof sheeting and wall cladding	Prerequisite CPCPCM2023A recoded to reflect changed unit Unit outcome altered Not equivalent to CPCPRF2002A	N
CPCPRF2013A Collect and store roof water	CPCPRF2003A Collect and store roof water	Prerequisite CPCPCM2023A recoded to reflect changed unit Unit outcome altered Not equivalent to CPCPRF20023A	N
CPCPRF2014A Fabricate roof coverings for curved structures	CPCPRF2004A Fabricate roof coverings for curved structures	Prerequisite CPCPCM2023A recoded to reflect changed unit Unit outcome altered Not equivalent to CPCPRF2004A	N
CPCPRF3011A Receive roofing	CPCPRF3001A Receive roofing	Prerequisite CPCPCM2023A recoded to	N

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Unit code and title in V6 Training Package	Relationship to units in V5 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
materials	materials	reflect changed unit Unit outcome altered Not equivalent to CPCPRF3001A	
CPCPRF3012A Fabricate and install roof drainage components	CPCPRF3002A Fabricate and install roof drainage components	Prerequisite CPCPCM2023A recoded to reflect changed unit Unit outcome altered Not equivalent to CPCPRF3002A	N
CPCPRF3013A Fabricate and install external flashings	CPCPRF3003A Fabricate and install external flashings	Prerequisite CPCPCM2023A recoded to reflect changed unit Unit outcome altered Not equivalent to CPCPRF3003A	N
CPCPRF3014A Install roof components	CPCPRF3004A Install roof components	Prerequisite CPCPCM2023A recoded to reflect changed unit Unit outcome altered Not equivalent to CPCPRF3004A	N
CPCPRF3015A Install roof coverings to curved roof structures	CPCPRF3005A Install roof coverings to curved roof structures	Prerequisite CPCPCM2023A recoded to reflect changed unit Unit outcome altered Not equivalent to CPCPRF3005A	N
CPCPRF3016A Install composite roof systems	CPCPRF3006A Install composite roof systems	Prerequisite CPCPCM2023A recoded to reflect changed unit Unit outcome altered Not equivalent to CPCPRF3006A	N

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Unit code and title in V6 Training Package	Relationship to units in V5 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
CPCPRF4011A Design and size roof drainage systems	CPCPRF4001A Plan, size and lay out roof drainage systems	Change to unit title, descriptor, element and performance criteria Sustainability content added Other minor changes Not equivalent to CPCPRF4001A	N
CPCPSN3011A Plan layout of a residential sanitary plumbing system	CPCPSN3001A Plan layout of a residential sanitary plumbing system	Sustainability content added Other minor changes Not equivalent to CPCPSN3001A	N
CPCPSN3012A Install discharge pipes	CPCPSN3002A Install discharge pipes	Prerequisite CPCPCM2023A recoded to reflect changed unit Sustainability content added Unit outcome altered Not equivalent to CPCPSN3002A	N
CPCPSN3013A Fabricate and install sanitary stacks	CPCPSN3003A Fabricate and install sanitary stacks	Prerequisite CPCPCM2023A recoded to reflect changed unit Sustainability content added Unit outcome altered Not equivalent to CPCPSN3003A	N
CPCPSN3014A Install and fit off sanitary fixtures	CPCPSN3004A Install and fit off sanitary fixtures	Prerequisite CPCPCM2023A recoded to reflect changed unit Sustainability content added	N

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Unit code and title in V6 Training Package	Relationship to units in V5 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
		Unit outcome altered Not equivalent to CPCPSN3004A	
CPCPSN3015A Install pre-treatment facilities	CPCPSN3005A Install pre-treatment facilities	Prerequisite CPCPCM2023A recoded to reflect changed unit Sustainability content added Unit outcome altered Not equivalent to CPCPSN3005A	N
CPCPSN3016A Install sewerage pump sets	CPCPSN3006A Install sewerage pump sets	Prerequisite CPCPCM2023A recoded to reflect changed unit Sustainability content added Unit outcome altered Not equivalent to CPCPSN3006A	N
CPCPSN4011A Design and size sanitary plumbing systems	CPCPSN4001A Plan, size and lay out sanitary pipework and fixtures	Change to unit title, descriptor, element and performance criteria Sustainability content added Unit outcome altered Not equivalent to CPCPSN4001A	N
CPCPWT3010A Connect and install storage tanks to a domestic water supply		New unit	
CPCPWT3011A Set out and install water services	CPCPWT3001A Set out and install water services	Prerequisite CPCPCM2023A recoded to reflect changed unit	N

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Unit code and title in V6 Training Package	Relationship to units in V5 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
		Sustainability content added Unit outcome altered Not equivalent to CPCPWT3001A	
CPCPWT3012A Install and adjust water service controls and devices	CPCPWT3002A Install and adjust water service controls and devices	Prerequisite CPCPCM2023A recoded to reflect changed unit Sustainability content added Unit outcome altered Not equivalent to CPCPWT3002A	N
CPCPWT3013A Install and commission water heating systems	CPCPWT3003A Install and commission water heating systems	Prerequisite CPCPCM2023A recoded to reflect changed unit Sustainability content added Unit outcome altered Not equivalent to CPCPWT3003A	N
CPCPWT3014A Install and maintain domestic water treatment equipment	CPCPWT3004A Install and maintain domestic water treatment equipment	Prerequisite CPCPCM2023A recoded to reflect changed unit Sustainability content added Unit outcome altered Not equivalent to CPCPWT3004A	N
CPCPWT3015A Install water pump sets	CPCPWT3005A Install water pump sets	Prerequisite CPCPCM2023A recoded to reflect changed unit Sustainability content added	N

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Unit code and title in V6 Training Package	Relationship to units in V5 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
		Unit outcome altered Not equivalent to CPCPWT3005A	
CPCPWT3016A Fit off and commission heated and cold water services	CPCPWT3006A Fit off and commission hot and cold water services	Prerequisite CPCPCM2023A recoded to reflect changed unit Sustainability content added Unit outcome altered Not equivalent to CPCPWT3006A	N
CPCPWT3017A Connect irrigation systems from drinking water supply	CPCPWT3007A Connect irrigation systems from drinking water supply	Prerequisite CPCPCM2023A recoded to reflect changed unit Sustainability content added Unit outcome altered Not equivalent to CPCPWT3007A	N
CPCPWT3018A Install water service	CPCPWT3008A Install water service	Prerequisite unit (x1) requirement removed from unit Remaining prerequisite CPCPCM2023A recoded to reflect changed unit Sustainability content added Unit outcome altered Not equivalent to CPCPWT3008A	N
CPCPWT3019A Install water pipe systems	CPCPWT3009A Install water pipe systems	Missing descriptor information added Prerequisite CPCPCM2023A recoded to reflect changed unit	N

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Unit code and title in V6 Training Package	Relationship to units in V5 CPC08	Comments in relation to previous version of this Training Package	Equivalent/ Not equivalent
		Sustainability content added Unit outcome altered Not equivalent to CPCPWT3009A	
CPCPWT4011A Design and size heated and cold water services and systems	CPCPWT4001A Plan, size and lay out hot and cold water services and systems	Change to unit title, descriptor, element and performance criteria Sustainability content added Unit outcome altered Not equivalent to CPCPWT4001A	N
CPCPWT4012A Commission and maintain backflow prevention devices	CPCPWT4002A Commission and maintain backflow prevention devices	Prerequisite unit requirement removed Unit outcome altered Not equivalent to CPCPWT4002A	N
CPCPWT4013A Commission and maintain heated water temperature control devices	CPCPWT4003A Commission and maintain hot water temperature control devices	Change to unit title, descriptor, performance criteria, required skills and knowledge, range statement and critical aspects Unit outcome altered Not equivalent to CPCPWT4003A	N

No other CPC units were changed in Version 6 of CPC08.

Mapping of CPC08 units of competency

Mapping Version 5 CPC08 units of competency to Version 4

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Unit cod and title in V5 Training Package	Relationship to units in V4 CPC08	Comments in relation to previous version of this Training Package
CPCCPB3027A Install ceiling insulation		New to CPC08
No other CPC units were changed in Version 5 of CPC08.		

Mapping Version 4 CPC08 units of competency to Version 3

Unit code and title in V4 Training Package	Relationship to units in V2 CPC08	Comments in relation to previous version of this Training Package
CPCCBC5001B Apply building codes and standards to the construction process for medium rise building projects	CPCCBC5001A Apply building codes and standards to the construction process for medium rise building projects	Unit amended to remove overlap and duplication due to the inclusion of Certificate IV aligned units in the amended CPP50210 Diploma of Building and Construction (Building) Equivalent to CPCCBC5001A
CPCCBC5018A Apply structural principles to the construction of medium rise buildings	CPCCBC5008A Apply structural principles to the construction of medium rise buildings	Prerequisite requirement added to unit CPCCBC5008A Unit outcome altered Not equivalent to CPCCBC5008A
No other CPC units were changed in Version 4 of CPC08.		

Mapping Version 3 CPC08 units of competency

No native or imported units of competency were changed or added as a result of the changes made in Version 3.

Mapping Version 2 CPC08 units of competency to Version 1

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Unit code and title in V2 Training Package	Relationship to units in V1 CPC08	Comments in relation to previous version of this Training Package
CPCMCM7001A Plan and manage complex projects		New to CPC08
CPCMCM7002A Manage the quality of projects and processes		New to CPC08
CPCSFS5001A Define scope and hazard level of fire systems design projects		New to CPC08
CPCSFS5002A Research and interpret detailed fire systems design project requirements		New to CPC08
CPCSFS5003A Develop plans and methodology for fire systems design projects		New to CPC08
CPCSFS5005A Research and evaluate fire system technologies and components		New to CPC08
CPCSFS5006A Create detailed designs for fire sprinkler systems		New to CPC08
CPCSFS5007A Create detailed designs for hydrant and hose reel systems		New to CPC08
CPCSFS5008A Create detailed designs for fire detection and warning systems		New to CPC08
CPCSFS5009A Create detailed designs for fire systems' water supplies		New to CPC08
CPCSFS5010A Provide		New to CPC08

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Unit code and title in V2 Training Package	Relationship to units in V1 CPC08	Comments in relation to previous version of this Training Package
documentation and support for fabrication of fire sprinkler systems		
CPCSFS5011A Provide design documentation and review and support fire system installation processes		New to CPC08
CPCSFS5013A Support commissioning processes and finalise fire systems design projects		New to CPC08
CPCSFS5014A Conduct annual fire systems certification inspections		New to CPC08
CPCSFS5015A Assess documentation for annual fire systems certification inspections		New to CPC08
CPCSFS7001A Define scope of and initiate special hazard fire systems design projects		New to CPC08
CPCSFS7002A Analyse, design and evaluate complex special hazard fire systems		New to CPC08
CPCSFS7003A Develop and submit tenders for fire systems design solutions		New to CPC08
No other CPC units were changed in Version 2 of CPC08.		

Mapping Version 1 CPC08 units of competency to previous Training Package

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
CPCCBC4001A Apply building codes and standards to the construction process for low rise building projects	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4001A Apply building* codes *and standards to the construction process for low-rise building projects* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4002A Manage occupational health and safety in the building and construction workplace	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4002A Manage occupational health and safety in the building and construction workplace* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4003A Select and prepare a construction contract	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4003A Select and prepare a construction contract* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4004A Identify and produce estimated costs for building and construction projects	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4004A Identify and produce estimated costs for building and construction projects* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
CPCCBC4005A Produce labour and material schedules for ordering	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4005A Produce labour and material schedules for ordering* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4006A Select, procure and store construction materials for low rise projects	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4006A Select procure and store construction materials for low-rise projects* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4007A Plan building or construction work	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4007A Plan building or construction work* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4008A Conduct on-site supervision of building and construction projects	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4008A Conduct on-site supervision of the building and construction project* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4009A Apply legal requirements to building and construction	Equivalent to existing unit in previous BCG03 General Construction Training	The code has an updated stem and version 'A' identifier (stream and number system

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
projects	Package, *BCGBC4009A Apply legal requirements to building and construction projects* that has been reformatted and has employability skills and equity audit enhancements.	remain the same).
CPCCBC4010A Apply structural principles to residential low rise constructions	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4010A Apply structural principles to residential low rise constructions* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4011A Apply structural principles to commercial low rise constructions	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4011A Apply structural principles to commercial low rise constructions* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4012A Read and interpret plans and specifications	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4012A Read and interpret plans and specifications* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4013A Prepare and evaluate tender documentation	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4013A Prepare and evaluate tender documentation* that has been	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	reformatted and has employability skills and equity audit enhancements.	
CPCCBC4014A Prepare simple building sketches and drawings	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4014A Prepare simple building sketches and drawings* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4015A Prepare specifications for all construction works	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4015A Prepare specifications for all construction works* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4016A Administer a construction contract	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4016A Administer a construction contract* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4017A Arrange resources and prepare for the building or construction project	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4017A Arrange resources and prepare for the building or construction project* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
CPCCBC4018A Apply site surveys and set-out procedures to building and construction projects	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4018A Apply site surveys and set out procedures to building and construction projects* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4019A Apply sustainable building design principles to water management systems	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4019A Apply sustainable building design principles to water management systems* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4020A Build thermally efficient and sustainable structures	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4020A Build thermally efficient and sustainable structures* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4021A Minimise waste on the building and construction site	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4021A Minimise waste on the building and construction site* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4022A Supervise tilt-up work	Equivalent to existing unit in previous BCG03 General	The code has an updated stem and version 'A' identifier

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	Construction Training Package, *BCGBC4022A Supervise tilt-up work* with revised unit content and reference to new safety code requirements. The unit has also been reformatted and has employability skills and equity audit enhancements.	(stream and number system remain the same).
CPCCBC4023A Plan and undertake site inspection and assessment of asbestos products and materials	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4023A Plan and undertake the site inspection and assessment of asbestos products and materials* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4024A Resolve business disputes	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4024A Resolve business disputes* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4025A Manage personal work priorities and professional development	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4025A Manage personal work priorities and professional development* that has been reformatted and has employability skills and equity audit enhancements.	Changes include removal or re-writing of some performance criteria relating to personal attributes that may not be objectively assessable. The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4026A Arrange building applications and	Equivalent to existing unit in previous BCG03 General Construction Training	The code has an updated stem and version 'A' identifier (stream and number system

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
approvals	Package, *BCGBC4026A Arrange building approvals and applications* that has been reformatted and has employability skills and equity audit enhancements.	remain the same).
CPCCBC4027A Establish a basis for sales consulting	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4027A Establish a basis for sales consulting* that has been reformatted and has employability skills and equity audit enhancements.	Changes include removal or re-writing of some performance criteria relating to personal attributes that may not be objectively assessable. The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4028A Prepare design brief for construction works	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4028A Prepare design brief* for construction works that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4029A Apply construction information to the sales process	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4029A Apply construction information to the sales process* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4030A Analyse and communicate industry information	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4030A Analyse and communicate industry information* that has been reformatted and has	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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	employability skills and equity audit enhancements.	
CPCCBC4031A Process client requirements	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4031A Process client requirements* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4032A Apply contract law to sales processes	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4032A Apply contract law to sales process* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4033A Maintain the sales environment	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4033A Maintain the sales environment* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4034A Apply codes and standards to building trade and services contracting	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4034A Apply codes and standards to building trade and services contracting* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4035A Initiate the heritage works process	Equivalent to existing unit in previous BCG03 General Construction Training	The code has an updated stem and version 'A' identifier (stream and number system

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	Package, *BCGBC4035A Initiate the heritage works process* that has been reformatted and has employability skills and equity audit enhancements.	remain the same).
CPCCBC4036A Prepare to undertake the heritage restoration process	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4036A Prepare to undertake the heritage restoration process* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4037A Prepare drawings for heritage works	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4037A Prepare drawings for heritage restoration work* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4038A Prepare work plans for restoration work	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4038A Prepare a workplan for restoration work* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4039A Undertake the heritage restoration process	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4039A Undertake the heritage restoration process* that has been reformatted and has employability skills and	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	equity audit enhancements.	
CPCCBC4040A Prepare report for heritage restoration work	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4040A Prepare report for heritage restoration work* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4041A Undertake preparations for refractory work	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4041A Undertake preparations for refractory work* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4042A Construct a fire brick wall and arch using refractory materials	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4042A Construct a fire brick wall and arch using refractory materials* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4043A Operate a self-erecting tower crane	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4043A Operate a self-erecting tower crane* that has been reformatted and has employability skills and equity audit enhancements. It complements a new licensing unit developed by OHS regulators and industry for	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	licensing this high risk work	
CPCCBC4044A Operate a tower crane	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4044A Operate a tower crane* that has been reformatted and has employability skills and equity audit enhancements. It complements a new licensing unit developed by OHS regulators and industry for licensing this high risk work	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4045A Perform rigging - advanced	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4045A Perform rigging - advanced* that has been reformatted and has employability skills and equity audit enhancements. It complements a new licensing unit developed by OHS regulators and industry for licensing this high risk work	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4046A Erect and dismantle advanced scaffolding	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC4046A Erect and dismantle scaffolding - advanced* that has been reformatted and has employability skills and equity audit enhancements. It complements a new licensing unit developed by OHS regulators and industry for licensing this high risk work	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC4047A Quality assure fire-rated lining	Equivalent to existing unit in previous BCG03 General Construction Training	The code has an updated stem and version 'A' identifier (stream and number system

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
systems	Package, *BCGBC4047A Quality assure fire rated lining systems* that has been reformatted and has employability skills and equity audit enhancements.	remain the same).
CPCCBC4048A Apply building codes and standards to the construction process for swimming pools and spas	New unit used in a new Certificate IV qualification in swimming pool and spa building. Based on general construction codes and standards application unit.	
CPCCBC4049A Apply structural principles to construction of swimming pools and spas	New unit used in a new Certificate IV qualification in swimming pool and spa building. Based on general construction structural principles application unit.	
CPCCBC4050A Select, procure and store construction materials for swimming pools and spa projects	New unit used in a new Certificate IV qualification in swimming pool and spa building. Based on general construction materials selection, procurement and storage application unit.	
CPCCBC5001A Apply building codes and standards to the construction process for medium rise building projects	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC5001A Apply building codes and standards to the construction process for medium rise building projects* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC5002A Monitor costing systems on medium rise building and construction projects	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC5002A Monitor building or*	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	construction costing systems on medium-rise building and construction projects that has been reformatted and has employability skills and equity audit enhancements.	
CPCCBC5003A Supervise the planning of on-site medium rise building or construction work	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC5003A Supervise the planning of on-site medium-rise building or construction work* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC5004A Supervise and apply quality standards to the selection of building and construction materials	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC5004A Supervise and apply quality standards to the selection of building and construction materials* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC5005A Select and manage building and construction contractors	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC5005A Select and manage building and construction contractor* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC5006A Apply site surveys and set-out procedures to medium rise building projects	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC5006A Apply site surveys and set out*	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	procedures to medium-rise building projects that has been reformatted and has employability skills and equity audit enhancements.	
CPCCBC5007A Administer the legal obligations of a building or construction contract	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC5007A Administer the legal obligations of a building or construction contract* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC5008A Apply structural principles to the construction of medium rise buildings	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC5008A Apply structural principles to the construction of medium-rise buildings* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC5009A Identify services layout and connection methods to medium rise construction projects	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC5009A Identify services layout and connection methods to medium-rise construction projects* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC5010A Manage construction work	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC5010A Manage construction*	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	work/projects that has been reformatted and has employability skills and equity audit enhancements.	
CPCCBC5011A Manage environmental management practices and processes in building and construction	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC5011A Manage building or construction environmental management practices and processes* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC5012A Manage the application and monitoring of energy conservation and management practices and processes	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC5012A Manage the application and monitoring of energy conservation and management practices and processes* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC5013A Develop professional technical and legal reports on building and construction projects	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC5013A Develop professional technical and legal reports on building and construction projects* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC6001A Apply building codes and standards to the construction process for	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC6001A Apply*	The code has an updated stem and version 'A' identifier (stream and number system

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
large building projects	*building codes and standards to the construction process for large building projects* that has been reformatted and has employability skills and equity audit enhancements.	remain the same).
CPCCBC6002A Generate and direct the development of new projects	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC6002A Generate and direct the development of new projects* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC6003A Establish, maintain and review contract administration procedures and frameworks	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC6003A Establish maintain and review contract administration procedures and frameworks* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC6004A Manage processes for and legal obligations of a building or construction contract	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC6004A Manage the processes for legal obligations of a building or construction contract* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC6005A Manage tender developments for major projects	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC6005A Manage tender developments for major projects* that has	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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	been reformatted and has employability skills and equity audit enhancements.	
CPCCBC6006A Manage the procurement and acquisition of resources for building or construction projects	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC6006A Manage the procurement and acquisition of resources for building or construction projects* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC6007A Develop, plan and implement appropriate building or construction environmental management practices and processes	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC6007A Develop plan and implement appropriate building or construction environmental management practices and processes* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC6008A Develop and implement an appropriate estimating and tendering system	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC6008A Develop and implement an appropriate estimating and tendering system* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC6009A Develop, plan and implement an appropriate building or construction planning	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC6009A Develop plan and implement*	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
process	*an appropriate building or construction planning process* that has been reformatted and has employability skills and equity audit enhancements.	
CPCCBC6010A Plan, develop and implement building or construction energy conservation and management practices and processes	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC6010A Plan develop and implement building or construction energy conservation and management practices and processes* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC6011A Establish systems to develop and monitor building and construction costs	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC6011A Establish systems for the development and monitoring of building and construction costs* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC6012A Manage and administer development of documentation for building or construction projects	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC6012A Manage and administer development of documentation for building and construction projects* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC6013A Evaluate materials for multi-storey	Equivalent to existing unit in previous BCG03 General	The code has an updated stem and version 'A' identifier

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
buildings	Construction Training Package, *BCGBC6013A Evaluate materials for multi storey buildings* that has been reformatted and has employability skills and equity audit enhancements.	(stream and number system remain the same).
CPCCBC6014A Apply structural principles to the construction of large, high rise and complex buildings	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC6014A Apply structural principles to the construction of large high rise and complex buildings* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC6015A Apply building surveying procedures	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC6015A Apply building surveying procedures* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC6016A Assess construction faults in large building projects	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC6016A Assess construction faults in large building projects* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBC6017A Evaluate services layout and connection methods for the planning of large building projects	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBC6017A Evaluate services layout and connection methods for the planning of large building*	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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	projects that has been reformatted and has employability skills and equity audit enhancements.	
CPCCBL2001A Handle and prepare bricklaying and blocklaying materials	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBL2001B Handle and prepare bricklaying/blocklaying materials* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBL2002A Use bricklaying and blocklaying tools and equipment	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBL2002B Use bricklaying and blocklaying tools and equipment* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBL3001A Lay paving	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBL3001B Lay paving* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBL3002A Carry out masonry veneer construction	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBL3002B Carry out masonry veneer construction* that has been reformatted and has employability skills and equity audit enhancements. Fire control and separation	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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	references have been inserted to meet OHS regulator requirements.	
CPCCBL3003A Carry out cavity brick construction	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBL3003B Carry out cavity brick construction* that has been reformatted and has employability skills and equity audit enhancements. Fire control and separation references have been inserted to meet OHS regulator requirements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBL3004A Construct masonry steps and stairs	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBL3004B Construct masonry steps and stairs* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBL3005A Lay masonry walls and corners	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBL3005B Lay masonry walls and corners* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBL3006A Lay multi-thickness walls and piers	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBL3006B Lay multi thickness walls and piers* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
CPCCBL3007A Install glass blockwork	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBL3007B Install glass blockwork* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBL3008A Install aerated autoclaved concrete products	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBL3008B Install aerated autoclaved concrete (AAC) products* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBL3009A Install flashings and damp proof course	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBL3009B Install flashings and damp proof course (DPC)* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBL3010A Construct masonry arches	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBL3010B Construct masonry arches* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBL3011A Construct curved walls	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBL3011B Construct curved walls* that has been reformatted and has	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	employability skills and equity audit enhancements.	
CPCCBL3012A Construct fireplaces and chimneys	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBL3012B Construct fireplaces and chimneys* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBL3013A Construct masonry structural systems	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBL3013B Construct masonry structural systems* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBL3014A Install fire-rated masonry construction	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBL3014B Install fire rated masonry construction* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBL3015A Construct decorative brickwork	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBL3015B Construct decorative brickwork* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCBL3016A Construct battered masonry walls and	Equivalent to existing unit in previous BCG03 General	The code has an updated stem and version 'A' identifier

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
piers	Construction Training Package, *BCGBL3016B Construct battered masonry walls and piers* that has been reformatted and has employability skills and equity audit enhancements.	(stream and number system remain the same).
CPCCBL3017A Carry out tuck pointing to brickwork	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGBL3017B Carry out tuck pointing to brickwork* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCA2001A Handle carpentry materials	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCA2001B Handle carpentry materials* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCA2002A Use carpentry tools and equipment	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCA2002B Use carpentry tools and equipment* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCA2003A Erect and dismantle formwork for footings and slabs on ground	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCA2003B Erect and dismantle formwork for footings and slabs on ground* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
CPCCCA3001A Carry out general demolition to minor building structures	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCA3001B Carry out general demolition to minor building structures* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCA3002A Carry out setting out	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCA3002B Carry out setting out* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCA3003A Install flooring systems	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCA3003B Install flooring systems* that has been reformatted and has employability skills and equity audit enhancements. Fire control and separation references have been inserted to meet OHS regulator requirements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCA3004A Construct wall frames	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCA3004B Construct wall frames* that has been reformatted and has employability skills and equity audit enhancements. Fire control and separation references have been inserted to meet OHS regulator requirements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
CPCCCA3005A Construct ceiling frames	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCA3005B Construct ceiling frames* that has been reformatted and has employability skills and equity audit enhancements. Fire control and separation references have been inserted to meet OHS regulator requirements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCA3006A Erect roof trusses	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCA3006B Erect roof trusses* that has been reformatted and has employability skills and equity audit enhancements. Fire control and separation references have been inserted to meet OHS regulator requirements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCA3007A Construct pitched roofs	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCA3007B Construct a pitched roof* that has been reformatted (including as light change to the title) and has employability skills and equity audit enhancements. Fire control and separation references have been inserted to meet OHS regulator requirements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCA3008A Construct eaves	Equivalent to existing unit in previous BCG03 General Construction Training	The code has an updated stem and version 'A' identifier (stream and number system

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	Package, *BCGCA3008B Construct eaves* that has been reformatted and has employability skills and equity audit enhancements.	remain the same).
CPCCCA3009A Construct advanced roofs	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCA3009B Construct advanced roofs* that has been reformatted and has employability skills and equity audit enhancements. Insertion of fire control and separation references to meet OHS regulator requirements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCA3010A Install and replace windows and doors	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCA3010B Install and replace windows and doors* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCA3011A Refurbish timber sashes to window frames	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCA3011B Refurbish timber sashes to window frames* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCA3012A Frame and fit wet area fixtures	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCA3012B Frame and fit wet area fixtures* that has been reformatted and has	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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	employability skills and equity audit enhancements.	
CPCCCA3013A Install lining, panelling and moulding	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCA3013B Install lining, panelling and moulding* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCA3014A Construct bulkheads	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCA3014B Construct bulkheads* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCA3015A Assemble partitions	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCA3015B Assemble partitions* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCA3016A Construct timber external stairs	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCA3016B Construct external stairs* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCA3017A Install exterior cladding	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCA3017B Install exterior cladding* that	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	has been reformatted and has employability skills and equity audit enhancements.	
CPCCCA3018A Construct, erect and dismantle formwork for stairs and ramps	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCA3018B Construct, erect and dismantle formwork for stairs and ramps* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCA3019A Erect and dismantle formwork to suspended slabs, columns, beams and walls	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCA3019B Erect and dismantle formwork to suspended slabs, columns, beams and walls* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCA3020A Erect and dismantle jump form formwork	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCA3020B Erect and dismantle jump form formwork* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCA3021A Erect and dismantle slip form formwork	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCA3021B Erect and dismantle slip form formwork* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
CPCCCA3022A Install curtain walling	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCA3022B Install curtain walling* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCA3023A Carry out levelling operations	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCA3023B Carry out levelling operations* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCM1001A Undertake basic estimation and costing	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGVE1004B Undertake basic estimation and costing* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCM1002A Work effectively and sustainably in the construction industry	Re-titled and enhanced unit previously *BCGCM1002B Work effectively in the general construction industry*. Unit has additional elements, performance criteria and assessment guidance to cover skills and knowledge in environmentally sustainable work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCM1003A Plan and organise work	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCM1003B Plan and organise work* that has	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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	been reformatted and has employability skills and equity audit enhancements.	
CPCCCM1004A Conduct workplace communication	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCM1004B Conduct workplace communication* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCM1005A Carry out measurements and calculations	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCM1005B Carry out measurements and calculations* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCM1006A Work safely at heights	*BCGCM1006AWorking safely at heights* is not equivalent to CPCCCM1006A Work safely at heights	Based on unit *BCGCM1006AWorking safely at heights* in previous BCG03 General Construction Training Package. A prerequisite unit requirement has been added.
CPCCCM1007A Carry out tilt-up work safely	New unit proposed by and developed in conjunction with OHS regulators to reflect the need for workers in support roles on tilt-up projects to understand tilt-up work safety codes and standards.	
CPCCCM2001A Read and interpret plans and specifications	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCM2001B Read and interpret plans and written specifications* that has	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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	been reformatted and has employability skills and equity audit enhancements.	
CPCCCM2002A Carry out excavation	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCM2002B Carry out excavation* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCM2003A Calculate and cost construction work	New unit used in painting and decorating qualification based on plumbing and services unit *CPCPCM4002A Estimate and cost work*.	
CPCCCM2004A Handle construction materials	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCM2004B Handle construction materials* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCM2005A Use construction tools and equipment	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCM2005B Use construction tools and equipment* that has been reformatted and has employability skills and equity audit enhancements. Qualification notes state compliance with State and Territory requirements for training and assessment on pneumatic and gas-powered tools and equipment is required.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
CPCCCM2006A Apply basic levelling procedures	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCM2006B Apply basic levelling procedures* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCM2007A Use explosive power tools	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCM2007B Use explosive power tools* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCM2008A Erect and dismantle restricted height scaffolding	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCM2008B Erect and dismantle restricted height scaffolding* that has been reformatted and has employability skills and equity audit enhancements. Change to references to 'modular' scaffolding.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCM2009A Carry out basic demolition	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCM2009B Carry out basic demolition* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCM3001A Operate elevated work platforms	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCM3001B*	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	Operate elevated work platforms that has been reformatted and has employability skills and equity audit enhancements. Changes to content to reflect OHS regulations and indication that the unit does not cover operation of boom lifts over 11 meters.	
CPCCCM3002A Operate a truck mounted loading crane	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCM3002B Operate a truck mounted loading crane* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCM3003A Work safely around power sources, services and assets	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCM3003B Work safely around power sources, services and assets* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCO2001A Handle concreting materials	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCO2001B Handle concreting materials* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCO2002A Use concreting tools and equipment	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCO2002B Use concreting tools and*	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	equipment that has been reformatted and has employability skills and equity audit enhancements.	
CPCCCO2003A Carry out concreting to simple forms	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCO2003B Carry out concreting to simple form* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCO2004A Carry out concrete work	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCO2004B Carry out concrete work* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCO3001A Place concrete	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCO3001B Place concrete* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCO3002A Finish concrete	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCO3002B Finish concrete that has been reformatted and has employability skills and equity audit enhancements.*	The code has an updated stem and version 'A' identifier (stream and number system remain the same)
CPCCCO3003A Cure concrete	Equivalent to existing unit in previous BCG03 General Construction Training	The code has an updated stem and version 'A' identifier (stream and number system

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	Package, *BCGCO3003B Cure concrete* that has been reformatted and has employability skills and equity audit enhancements.	remain the same).
CPCCCO3004A Carry out decorative finishes to concrete	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCO3004B Carry out decorative finishes to concrete* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCO3005A Resurface concrete	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCO3005B Resurface concrete* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCO3006A Carry out repair and rectification of concrete	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCO3006B Carry out repair and rectification of concrete* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCO3007A Cut and core concrete	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCO3007B Cut and core concrete* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCO3008A Carry out	Equivalent to existing unit in	The code has an updated stem

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tilt panel construction	previous BCG03 General Construction Training Package, *BCGCO3008B Carry out tilt panel construction* that has been reformatted and has employability skills and equity audit enhancements.	and version 'A' identifier (stream and number system remain the same).
CPCCCO3009A Apply and finish sprayed concrete	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCO3009B Apply and finish sprayed concrete* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCO3010A Carry out high performance concreting	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCO3010B Carry out high performance concreting* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCO3011A Conduct off-form vertical concrete operations	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCO3011B Off form vertical concrete* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCO3012A Conduct concrete boom delivery operations	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCO3012B Conduct concrete boom delivery operations* that has been reformatted and has	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	employability skills and equity audit enhancements. It complements a new licensing unit developed by OHS regulators and industry for licensing this high risk work	
CPCCCO3013A Slump test concrete	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCO3013B Slump test concrete* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCCO3014A Conduct concrete agitator truck operations	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGCO3014B Conduct concrete agitator truck operations* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCDE2001A Use demolition tools and equipment	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGDE2001B Use demolition tools and equipment* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCDE2002A Carry out manual general demolition	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGDE2002B Carry out manual general demolition* that has been reformatted and has employability skills and	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	equity audit enhancements.	
CPCCDE3001A Carry out mechanical general demolition	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGDE3001B Carry out mechanical general demolition* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCDE3002A Encapsulate and remove asbestos	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGDE3002B Encapsulate and remove asbestos* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCDE3003A Operate a crushing plant	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGDE3003B Operate a crushing plant* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCDO2001A Handle and use dogging tools and equipment	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGDO2001B Safely handle and use dogging tools and equipment* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCDO3001A Perform dogging	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGDO3001B*	The code has an updated stem and version 'A' identifier (stream and number system

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	Perform dogging that has been reformatted and has employability skills and equity audit enhancements. It complements a new licensing unit developed by OHS regulators and industry for licensing this high risk work	remain the same).
CPCCDO3002A Perform crane scheduling	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGDO3002B Perform crane scheduling* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCJN2001A Assemble components	Unit from previous BCF00 Off-Site Construction Training Package, *BCF2013A Assemble components* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'JN' to reflect joinery. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCJN2002A Prepare for off-site manufacturing process	Unit from previous BCF00 Off-Site Construction Training Package, *BCF2016A Prepare for off-site manufacturing process* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'JN' to reflect joinery. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCJN2003A Package manufactured products for	Unit from previous BCF00 Off-Site Construction	The code has an updated stem and version 'A' identifier and a

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transport	Training Package, *BCF2012A Package manufactured products for transport* that has been reformatted and has employability skills and equity audit enhancements.	new stream identified 'JN' to reflect joinery. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCJN3001A Use static machines	Unit from previous BCF00 Off-Site Construction Training Package, *BCF2001A Use static machines* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'JN' to reflect joinery. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCJN3002A Use computer-controlled machinery	Unit from previous BCF00 Off-Site Construction Training Package, *BCF3002A Use computer controlled machinery* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'JN' to reflect joinery. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCJN3003A Manufacture components for door and window frames and doors	Unit from previous BCF00 Off-Site Construction Training Package, *BCF3010A Manufacture and assemble components for door and window frames and doors and sashes*. The title has been amended to reflect assembly is not a significant component	The code has an updated stem and version 'A' identifier and a new stream identified 'JN' to reflect joinery. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	The unit has been reformatted and has employability skills and equity audit enhancements.	units and ensure consistency with other construction coding.
CPCCJN3004A Manufacture joinery components	Unit from previous BCF00 Off-Site Construction Training Package, *BCF3045A Manufacture joinery components* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'JN' to reflect joinery. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCJN3005A Cut and install glass	Unit from previous BCF00 Off-Site Construction Training Package, *BCF3041A Cut and install glass* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'JN' to reflect joinery. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCJS3001A Design and set out stairs	Amalgamation of two units from previous BCF00 Off-Site Construction Training Package, *BCF3003A Identify stair construction and the factors covering stair design* and *BCF3004A Set out stairs*. It has had content changes to reflect latest work practices and reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'JS' to reflect stair building joinery work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCJS3002A	Unit from previous BCF00	The code has an updated stem

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
Manufacture stair components for straight flighted stairs	Off-Site Construction Training Package, *BCF3005A Manufacture stair components - straight flighted stairs*. It has had content changes to reflect latest work practices and reformatted and has employability skills and equity audit enhancements.	and version 'A' identifier and a new stream identified 'JS' to reflect stair building joinery work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCJS3003A Assemble and install stairs	Unit from previous BCF00 Off-Site Construction Training Package, *BCF3006A Assemble and install stairs* It has had content changes to reflect latest work practices and reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'JS' to reflect stair building joinery work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCJS3004A Manufacture and install continuous handrailing and special stair components	Unit from previous BCF00 Off-Site Construction Training Package, *BCF3007A Manufacture and install continuous hand-railing and special stair components*. It has had content changes to reflect latest work practices and reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'JS' to reflect stair building joinery work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCJS3005A Manufacture stair components for curved and geometric stairs	Unit from previous BCF00 Off-Site Construction Training Package, *BCF3039A Manufacture stair components - curved and geometric stairs*.	The code has an updated stem and version 'A' identifier and a new stream identified 'JS' to reflect stair building joinery work.

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	It has had content changes to reflect latest work practices and reformatted and has employability skills and equity audit enhancements.	Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCJS3006A Construct fabricated stairs	Unit from previous BCF00 Off-Site Construction Training Package, *BCF3068A Construct fabricated stairs* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'JS' to reflect stair building joinery work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCLBM3001A License to operate a concrete placing boom	New unit developed by industry and OHS regulators to reflect new consistent national licensing of high risk work.	The unit has been formatted into the correct NTIS template but had no content changes made other than necessary editing for this purpose due to its regulatory nature.
CPCCLDG3001A License to perform dogging	New unit developed by industry and OHS regulators to reflect new consistent national licensing of high risk work.	The unit has been formatted into the correct NTIS template but had no content changes made other than necessary editing for this purpose due to its regulatory nature.
CPCCLHS3001A License to operate a personnel and materials hoist	New unit developed by industry and OHS regulators to reflect new consistent national licensing of high risk work.	The unit has been formatted into the correct NTIS template but had no content changes made other than necessary editing for this purpose due to its regulatory nature.
CPCCLHS3002A License to operate a materials hoist	New unit developed by industry and OHS regulators	The unit has been formatted into the correct NTIS template

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	to reflect new consistent national licensing of high risk work.	but had no content changes made other than necessary editing for this purpose due to its regulatory nature.
CPCCLRG3001A License to perform rigging - basic level	New unit developed by industry and OHS regulators to reflect new consistent national licensing of high risk work.	The unit has been formatted into the correct NTIS template but had no content changes made other than necessary editing for this purpose due to its regulatory nature.
CPCCLRG3002A License to perform rigging - intermediate level	New unit developed by industry and OHS regulators to reflect new consistent national licensing of high risk work.	The unit has been formatted into the correct NTIS template but had no content changes made other than necessary editing for this purpose due to its regulatory nature.
CPCCLRG4001A License to perform rigging - advanced level	New unit developed by industry and OHS regulators to reflect new consistent national licensing of high risk work.	The unit has been formatted into the correct NTIS template but had no content changes made other than necessary editing for this purpose due to its regulatory nature.
CPCCLSF2001A Licence to erect, alter and dismantle scaffolding - basic level	New unit developed by industry and OHS regulators to reflect new consistent national licensing of high risk work.	The unit has been formatted into the correct NTIS template but had no content changes made other than necessary editing for this purpose due to its regulatory nature.
CPCCLSF3001A Licence to erect, alter and dismantle scaffolding - intermediate level	New unit developed by industry and OHS regulators to reflect new consistent national licensing of high risk work.	The unit has been formatted into the correct NTIS template but had no content changes made other than necessary editing for this purpose due to its regulatory nature.
CPCCLSF4001A Licence to erect, alter and dismantle scaffolding - advanced level	New unit developed by industry and OHS regulators to reflect new consistent national licensing of high risk	The unit has been formatted into the correct NTIS template but had no content changes made other than necessary editing for this purpose due to

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	work.	its regulatory nature.
CPCCLTC4001A Licence to operate a tower crane	New unit developed by industry and OHS regulators to reflect new consistent national licensing of high risk work.	The unit has been formatted into the correct NTIS template but had no content changes made other than necessary editing for this purpose due to its regulatory nature.
CPCCLTC4002A Licence to operate a self-erecting tower crane	New unit developed by industry and OHS regulators to reflect new consistent national licensing of high risk work.	The unit has been formatted into the correct NTIS template but had no content changes made other than necessary editing for this purpose due to its regulatory nature.
CPCCOHS1001A Work safely in the construction industry	New unit reflecting the newly adopted Construction OHS Code of Practice requirements. The unit has been agreed by OHS regulators as meeting the training requirements for issue of construction site safety cards in most jurisdictions. Content has been updated to reflect June amendments by ASCC Working Group.	
CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry	Equivalent to existing unit in previous Construction Training Package, *BCGCM1001B Follow OHS policies and procedures* that has been re-titled and had additional content covering recognition and reporting of asbestos containing materials found in construction projects. The unit has also been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent	The code has an updated stem and version 'A' identifier and a new stream identified 'OHS' to reflect the activity.

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	and reflect new technology and work practices.	
CPCCPA3001A Prepare subgrade, base and bedding course for segmental paving	New unit to identify specialist paving skills used in the new Certificate III in Paving.	
CPCCPA3002A Lay segmental pavers	New unit to identify specialist paving skills used in the new Certificate III in Paving.	
CPCCPA3003A Cut segmental pavers	New unit to identify specialist paving skills used in the new Certificate III in Paving.	
CPCCPA3004A Finish segmental paving	New unit to identify specialist paving skills used in the new Certificate III in Paving.	
CPCCPA3005A Maintain and repair segmental paving	New unit to identify specialist paving skills used in the new Certificate III in Paving.	
CPCCPB3001A Fix standard plasterboard wall sheets	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPB3001A Fix standard plasterboard wall sheets* that has been reformatted and has employability skills and equity audit enhancements.	This plasterboard stream unit was added to the previous BCG03 Training Package in 2006 as part of the development of intermediate qualifications required by a COAG decision. The unit replaces a previous wall and ceiling lining stream unit. The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPB3002A Fix standard plasterboard ceiling sheets	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPB3002A Fix standard plasterboard ceiling sheets* that has been	This plasterboard stream unit was added to the previous BCG03 Training Package in 2006 as part of the development of intermediate qualifications required by a COAG decision.

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	reformatted and has employability skills and equity audit enhancements.	The unit replaces a previous wall and ceiling lining stream unit. The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPB3003A Fix battens	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPB3003A Fix battens* that has been reformatted and has employability skills and equity audit enhancements.	This plasterboard stream unit was added to the previous BCG03 Training Package in 2006 as part of the development of intermediate qualifications required by a COAG decision. The unit replaces a previous wall and ceiling lining stream unit. The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPB3004A Fix wet area sheets	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPB3004A Fix wet area sheets* that has been reformatted and has employability skills and equity audit enhancements.	This plasterboard stream unit was added to the previous BCG03 Training Package in 2006 as part of the development of intermediate qualifications required by a COAG decision. The unit replaces a previous wall and ceiling lining stream unit. The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPB3005A Fix ceiling sheets to external protected areas	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPB3005A Fix ceiling sheets to external protected areas* that has been	This plasterboard stream unit was added to the previous BCG03 Training Package in 2006 as part of the development of intermediate qualifications required by a COAG decision.

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	reformatted and has employability skills and equity audit enhancements.	The unit replaces a previous wall and ceiling lining stream unit. The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPB3006A Fix fibre cement board	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPB3006A Fix fibre cement board* that has been reformatted and has employability skills and equity audit enhancements.	This plasterboard stream unit was added to the previous BCG03 Training Package in 2006 as part of the development of intermediate qualifications required by a COAG decision. The unit replaces a previous wall and ceiling lining stream unit. The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPB3007A Apply levels of finish standards to planning and inspection of own work	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPB3007A Apply levels of finish standards to planning and inspection of own work* that has been reformatted and has employability skills and equity audit enhancements.	This plasterboard stream unit was added to the previous BCG03 Training Package in 2006 as part of the development of intermediate qualifications required by a COAG decision. The unit replaces a previous wall and ceiling lining stream unit. The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPB3008A Mix plastering compounds	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPB3008A Mix plastering compounds* that has been reformatted and has	This plasterboard stream unit was added to the previous BCG03 Training Package in 2006 as part of the development of intermediate qualifications required by a COAG decision.

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	employability skills and equity audit enhancements.	The unit replaces a previous wall and ceiling lining stream unit. The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPB3009A Finish plasterboard joins manually	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPB3009A Finish plasterboard joins by hand* has been reformatted and has employability skills and equity audit enhancements.	This plasterboard stream unit was added to the previous BCG03 Training Package in 2006 as part of the development of intermediate qualifications required by a COAG decision. The unit replaces a previous wall and ceiling lining stream unit. The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPB3010A Manually sand plaster work	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPB3010A Hand sand plaster work* that has been reformatted and has employability skills and equity audit enhancements.	This plasterboard stream unit was added to the previous BCG03 Training Package in 2006 as part of the development of intermediate qualifications required by a COAG decision. The unit replaces a previous wall and ceiling lining stream unit. The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPB3011A Finish category 1 and 2 wet areas	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPB3011A Finish category 1 & 2 wet areas* that has been	This plasterboard stream unit was added to the previous BCG03 Training Package in 2006 as part of the development of intermediate qualifications required by a COAG decision.

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	reformatted and has employability skills and equity audit enhancements.	The unit replaces a previous wall and ceiling lining stream unit. The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPB3012A Cut and fix paper-faced cornices	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPB3012A Cut and fix paper faced cornice* that has been reformatted and has employability skills and equity audit enhancements.	This plasterboard stream unit was added to the previous BCG03 Training Package in 2006 as part of the development of intermediate qualifications required by a COAG decision. The unit replaces a previous wall and ceiling lining stream unit. The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPB3013A Plan travel routes	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPB3013A Plan travel routes* that has been reformatted and has employability skills and equity audit enhancements.	This plasterboard stream unit was added to the previous BCG03 Training Package in 2006 as part of the development of intermediate qualifications required by a COAG decision. The unit replaces a previous wall and ceiling lining stream unit. The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPB3014A Install batt insulation products	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPB3014A Install batt insulation products* that has been	This plasterboard stream unit was added to the previous BCG03 Training Package in 2006 as part of the development of intermediate qualifications required by a COAG decision.

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	reformatted and has employability skills and equity audit enhancements.	The unit replaces a previous wall and ceiling lining stream unit. The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPB3015A Install acoustic and thermal environmental protection systems	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPB3015A Install acoustic and thermal environmental protection systems* that has been reformatted and has employability skills and equity audit enhancements.	This plasterboard stream unit was added to the previous BCG03 Training Package in 2006 as part of the development of intermediate qualifications required by a COAG decision. The unit replaces a previous wall and ceiling lining stream unit. The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPB3016A Install and finish columns	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPB3016A Install and finish columns* that has been reformatted and has employability skills and equity audit enhancements.	This plasterboard stream unit was added to the previous BCG03 Training Package in 2006 as part of the development of intermediate qualifications required by a COAG decision. The unit replaces a previous wall and ceiling lining stream unit. The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPB3017A Rectify faults in plaster applications	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPB3017A Rectify faults in plaster applications* that has been	This plasterboard stream unit was added to the previous BCG03 Training Package in 2006 as part of the development of intermediate qualifications required by a COAG decision.

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	reformatted and has employability skills and equity audit enhancements.	The unit replaces a previous wall and ceiling lining stream unit. The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPB3018A Use vacuum and electric sanding equipment to finish plaster work	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPB3018A Use vacuum/electric sanding equipment to finish plaster work* that has been reformatted and has employability skills and equity audit enhancements.	This plasterboard stream unit was added to the previous BCG03 Training Package in 2006 as part of the development of intermediate qualifications required by a COAG decision. The unit replaces a previous wall and ceiling lining stream unit. The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPB3019A Inspect equipment for serviceability	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPB3027A Inspect equipment for serviceability* that has been reformatted and has employability skills and equity audit enhancements.	This plasterboard stream unit was added to the previous BCG03 Training Package in 2006 as part of the development of intermediate qualifications required by a COAG decision. The unit replaces a previous wall and ceiling lining stream unit. The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPB3020A Match, mitre and install cast ornamental cornices	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPB3020A Match mitre and install cast ornamental cornice* that has	This plasterboard stream unit was added to the previous BCG03 Training Package in 2006 as part of the development of intermediate qualifications required by a COAG decision.

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	been reformatted and has employability skills and equity audit enhancements.	The unit replaces a previous wall and ceiling lining stream unit. The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPB3021A Install and fix residential acoustic plaster products	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPB3021A Install and fix residential acoustic plaster products* that has been reformatted and has employability skills and equity audit enhancements.	This plasterboard stream unit was added to the previous BCG03 Training Package in 2006 as part of the development of intermediate qualifications required by a COAG decision. The unit replaces a previous wall and ceiling lining stream unit. The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPB3022A Use mechanical jointing equipment to finish joints	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPB3022A Use mechanical jointing equipment to finish joints* that has been reformatted and has employability skills and equity audit enhancements.	This plasterboard stream unit was added to the previous BCG03 Training Package in 2006 as part of the development of intermediate qualifications required by a COAG decision. The unit replaces a previous wall and ceiling lining stream unit. The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPB3023A Load and unload plaster and plaster-related products	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPB3023A Load and unload plaster and plaster related products* that has been	This plasterboard stream unit was added to the previous BCG03 Training Package in 2006 as part of the development of intermediate qualifications required by a COAG decision.

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	reformatted and has employability skills and equity audit enhancements.	The unit replaces a previous wall and ceiling lining stream unit. The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPB3024A Use manual handling equipment to manoeuvre plaster products	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPB3024A Use manual handling equipment to manoeuvre plaster products* that has been reformatted and has employability skills and equity audit enhancements.	This plasterboard stream unit was added to the previous BCG03 Training Package in 2006 as part of the development of intermediate qualifications required by a COAG decision. The unit replaces a previous wall and ceiling lining stream unit. The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPB3025A Store plasterboard and related products	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPB3025A Store plasterboard and related products* that has been reformatted and has employability skills and equity audit enhancements.	This plasterboard stream unit was added to the previous BCG03 Training Package in 2006 as part of the development of intermediate qualifications required by a COAG decision. The unit replaces a previous wall and ceiling lining stream unit. The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPB3026A Erect and maintain trestle and plank systems	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPB3026A Erect and maintain trestle and plank systems* that has been	This plasterboard stream unit was added to the previous BCG03 Training Package in 2006 as part of the development of intermediate qualifications required by a COAG decision.

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	reformatted and has employability skills and equity audit enhancements.	The unit replaces a previous wall and ceiling lining stream unit. The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPD2001A Handle painting and decorating materials	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPD2001B Handle painting and decorating materials* has been reformatted and has employability skills and equity audit enhancements. It has also been enhanced to improve sustainable work practices and resource use.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPD2002A Use painting and decorating tools and equipment	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPD2002B Use painting and decorating tools and equipment* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same)
CPCCPD2003A Remove and replace doors and door and window components	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPD2003B Remove and replace doors and door and window furniture* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPD3001A Prepare surfaces for painting	Equivalent to existing unit in previous BCG03 General	The code has an updated stem and version 'A' identifier

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	Construction Training Package, *BCGPD3001B Prepare surfaces for painting* that has been reformatted and has employability skills and equity audit enhancements.	(stream and number system remain the same).
CPCCPD3002A Apply paint by brush and roller	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPD3002B Apply paint by brush and roller* that has been reformatted and has employability skills and equity audit enhancements. Change to Critical aspects of Evidence from completing a minimum of 8 square meters to 6 square metres. It has also been enhanced to improve sustainable work practices and resource use.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPD3003A Apply texture coat paint finishes by brush, roller and spray	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPD3003B Apply texture coat paint finishes by brush roller and spray* that has been reformatted and has employability skills and equity audit enhancements. Change to Critical aspects of Evidence from completing a minimum of 8 square meters to 6 square metres. It has also been enhanced to improve sustainable work practices and resource use.	The code has an updated stem and version 'A' identifier (stream and number system remain the same)
CPCCPD3004A Apply paint by spray	Equivalent to existing unit in previous BCG03 General	The code has an updated stem and version 'A' identifier

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	Construction Training Package, *BCGPD3004B Apply paint by spray* that has been reformatted and has employability skills and equity audit enhancements. Change to Critical aspects of Evidence from completing a minimum of 8 square meters to 6 square metres. It has also been enhanced to improve sustainable work practices and resource use.	(stream and number system remain the same).
CPCCPD3005A Match specified paint colour	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPD3005B Match specified paint colour* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPD3006A Apply stains and clear timber finishes	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPD3006B Apply stains and clear timber finishes* that has been reformatted and has employability skills and equity audit enhancements. It has also been enhanced to improve sustainable work practices and resource use.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPD3007A Apply wallpaper	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPD3007B Apply wall paper* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	Change to Critical aspects of Evidence from completing a minimum of 8 square meters to 6 square metres	
CPCCPD3008A Apply decorative paint finishes	Restructured unit based on *BCGPB3008B Apply decorative paint finishes* with several more advanced painting techniques developed into a new unit, *CPCCPD3014A Apply advanced decorative paint finishes*. The unit content has been reformatted and has employability skills and equity audit enhancements. It has also been enhanced to improve sustainable work practices and resource use.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPD3009A Remove graffiti and apply protective coatings	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPD3009B Remove graffiti and apply protective coatings* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPD3010A Apply protective paint coating systems	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPD3010B Apply protective paint coating systems* that has been reformatted and has employability skills and equity audit enhancements. It has also been enhanced to improve sustainable work practices and resource use.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPD3011A Apply lead	Equivalent to existing unit in	The code has an updated stem

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
paint and asbestos management	previous BCG03 General Construction Training Package, *BCGPD3011B Treat lead paint hazards* that has been reformatted and has employability skills and equity audit enhancements.	and version 'A' identifier (stream and number system remain the same).
CPCCPD3012A Apply advanced wallpaper techniques	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGPD3012B Apply advanced wallpaper techniques* that has been reformatted and has employability skills and equity audit enhancements. Change to Critical aspects of Evidence from completing a minimum of 8 square meters to 6 square metres	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCPD3013A Apply intumescent coatings	New unit to reflect skills in application of fire-retardant coatings.	
CPCCPD3014A Apply advanced decorative paint finishes	New unit to reflect skills in application of specialist decorative paint finishes, partly taken from the previous *BCG3008B Apply decorative paint finishes* plus additional techniques. It has also been enhanced to improve sustainable work practices and resource use.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCRI3001A Operate personnel and materials hoists	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGRI3001B Operate personnel and materials hoists* that has been reformatted and has employability skills and	

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	equity audit enhancements. It complements a new licensing unit developed by OHS regulators and industry for licensing this high risk work	
CPCCRI3002A Perform rigging - basic	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGRI3002B Perform rigging - basic* that has been reformatted and has employability skills and equity audit enhancements. It complements a new licensing unit developed by OHS regulators and industry for licensing this high risk work	
CPCCRI3003A Perform rigging - intermediate	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGRI3003B Perform rigging -intermediate* that has been reformatted and has employability skills and equity audit enhancements. It complements a new licensing unit developed by OHS regulators and industry for licensing this high risk work	
CPCCRI3004A Perform advanced structural steel erection	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGRI3004B Perform advanced structural steel erection* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCRI3005A Perform advanced tilt-up slab	Equivalent to existing unit in previous BCG03 General Construction Training	The code has an updated stem and version 'A' identifier (stream and number system

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
erection	Package, *BCGRI3005B Perform advanced tilt slab erection* that has been reformatted and has employability skills and equity audit enhancements.	remain the same).
CPCCRI3006A Perform advanced tower crane erection	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGRI3006B Perform advanced tower crane erection* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCRT2001A Handle roof tiling materials	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGRT2001B Handle roof tiling materials* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCRT2002A Use roof tiling tools and equipment	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGRT2002B Use roof tiling tools and equipment* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCRT3001A Tile regular roofs	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGRT3001B Tile a regular roof* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
CPCCRT3002A Tile irregular roofs	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGRT3002B Tile an irregular roof* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCRT3003A Repair and replace valleys, valley irons and flashings	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGRT3003B Repair and replace valleys, valley irons and flashings* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCRT3004A Repair and renovate tile roofs	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGRT3004B Repair and/or renovate tile roofs* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCRT3005A Slate a roof	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGRT3005B Slate a roof* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCRT3006A Fix shingles to roofs and facades	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGRT3006B Fix shingles to roofs and facades* that has been reformatted and	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	has employability skills and equity audit enhancements.	
CPCCSC2001A Safely handle and use scaffolding tools and equipment	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSC2001B Safely handle and use scaffolding tools and equipment* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSC2002A Erect and dismantle basic scaffolding	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSC2002B Erect and dismantle scaffolding - basic* that has been reformatted and has employability skills and equity audit enhancements. It complements a new licensing unit developed by OHS regulators and industry for licensing this high risk work	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSC3001A Erect and dismantle intermediate scaffolding	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSC3001B Erect and dismantle scaffolding - intermediate* that has been reformatted and has employability skills and equity audit enhancements. It complements a new licensing unit developed by OHS regulators and industry for licensing this high risk work	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSF2001A Handle steelfixing materials	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSF2001B*	The code has an updated stem and version 'A' identifier (stream and number system

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	Handle steel fixing materials that has been reformatted and has employability skills and equity audit enhancements.	remain the same).
CPCCSF2002A Use steelfixing tools and equipment	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSF2002B Use steel fixing tools and equipment* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSF2003A Cut and bend materials using oxy-LPG equipment	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSF2003B Cut and bend materials using Oxy/LPG equipment* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSF2004A Place and fix reinforcement materials	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSF2004B Place and fix reinforcement material* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSF2005A Arc weld reinforcement steel	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSF2005B Arc weld reinforcement steel* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSF2006A Machine	Equivalent to existing unit in previous BCG03 General	The code has an updated stem and version 'A' identifier

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cut reinforcement materials	Construction Training Package, *BCGSF2006B Machine cut reinforcement materials* that has been reformatted and has employability skills and equity audit enhancements.	(stream and number system remain the same).
CPCCSF2007A Splice and anchor using mechanical methods	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSF2007B Splice and anchor using mechanical methods* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSF3001A Apply reinforcement schedule	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSF3001B Apply reinforcement schedule* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSF3002A Carry out monostrand post-tensioning	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSF3002B Carry out monostrand post tensioning* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSF3003A Carry out multistrand post-tensioning	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSF3003B Carry out multistrand post tensioning* that has been reformatted and has employability skills and	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	equity audit enhancements.	
CPCCSF3004A Carry out stressbar post-tensioning	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSF3004B Carry out stressbar post tensioning* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSH2001A Prepare surfaces	New unit based on similar surface preparation units in BCG03 General Construction Training Package.	The code has a new stream identified 'SH' to reflect shopfitting work.
CPCCSH2002A Use aluminium sections for fabrication	Amalgamation of two units from previous BCF00 Off-Site Construction Training Package, *BCF3014A Prepare aluminium for assembly* and *BCF2015A Assemble aluminium framework*. It has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'SH' to reflect shopfitting work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCSH2003A Apply and install sealant and sealant devices	Unit from previous BCF00 Off-Site Construction Training Package, *BCF2018A Apply and install sealant devices* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'SH' to reflect shopfitting work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCSH3001A Set out and assemble cabinets, showcases, wall units,	Amalgamation of units from previous BCF00 Off-Site Construction Training Package, *BCF3012A Setting*	The code has an updated stem and version 'A' identifier and a new stream identified 'SH' to

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
counters and workstations	*out cabinets showcases wall units counters and work stations* and *BCF3013A Assemble cabinets showcases wall units counters and work stations*. It has been reformatted and has employability skills and equity audit enhancements.	reflect shopfitting work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCSH3002A Set out and fabricate shopfront commercial entries bulkheads and component fittings	Amalgamation of units from previous BCF00 Off-Site Construction Training Package, *BCF3016A Set out shopfront commercial entries bulkheads and component fittings* and *BCF3017A Fabricate shopfront commercial entries bulkheads including component fittings*. It has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'SH' to reflect shopfitting work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCSH3003A Assemble and install shopfront commercial entries bulkheads and components	Unit from previous BCF00 Off-Site Construction Training Package, *BCF3018A Assemble/install shopfront commercial entries bulkheads and components* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'SH' to reflect shopfitting work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCSH3004A Apply finishes	Unit from previous BCF00 Off-Site Construction Training Package, *BCF3023A Apply finishes* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'SH' to reflect shopfitting work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
		now allocated to the retained units and ensure consistency with other construction coding.
CPCCSH3005A Apply and trim decorative finishes	Unit from previous BCF00 Off-Site Construction Training Package, *BCF3038A Apply and trim decorative finishes* reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'SH' to reflect shopfitting work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCSI2001A Use colour for signage	Restructured unit from previous BCF00 Off-Site Construction Training Package, *BCF2005A Use colour matching for signwriting* that has amended content, been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'SI' to reflect signage work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCSI2002A Lay out and design signage	Restructured unit from previous BCF00 Off-Site Construction Training Package, *BCF2004A Layout signs* that has amended content and employability skills and equity audit enhancements, and has been reformatted.	The code has an updated stem and version 'A' identifier and a new stream identified 'SI' to reflect signage work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCSI2003A Prepare surfaces for signage	New unit to reflect specific skills in surface preparation for signage installation.	

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CPCCSI2004A Produce digital signage	New unit replacing previous BCF00 Off-Site Construction Training Package unit, *BCF3057A Produce CAM signs - digital.*	
CPCCSI2005A Fabricate signage	New unit replacing previous BCF00 Off-Site Construction Training Package unit *BCF3063A Fabricate plastic signs.*	
CPCCSI2006A Signwrite to simple forms	Restructured unit from previous BCF00 Off-Site Construction Training Package *BCF3052A Sign write to simple forms* that has amended content, been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'SI' to reflect signage work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCSI2007A Apply fasteners and fixings	New unit reflecting the need to use a range of special fastenings for sign installation.	
CPCCSI3001A Produce vinyl signage	Restructured unit from previous BCF00 Off-Site Construction Training Package, *BCF3056A Produce AM signs - vinyl* that has amended content and employability skills and equity audit enhancements, and has been reformatted.	The code has an updated stem and version 'A' identifier and a new stream identified 'SI' to reflect signage work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCSI3002A Use rotary router	New unit reflecting the need to use new technology for sign manufacture.	

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
CPCCSI3003A Signwrite to decorative forms	Restructured unit from previous BCF00 Off-Site Construction Training Package, *BCF3053A Sign write to decorative forms* that has amended content and employability skills and equity audit enhancements, and has been reformatted.	The code has an updated stem and version 'A' identifier and a new stream identified 'SI' to reflect signage work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCSI3004A Apply advanced vinyl applications	New unit reflecting the need to use new technology for sign manufacture.	
CPCCSI3005A Use engraving systems	New unit reflecting the need to use new technology for sign manufacture.	
CPCCSI3006A Apply gilding to signage	Restructured unit from previous BCF00 Off-Site Construction Training Package, *BCF3022A Apply gilding to signs* that has amended content and employability skills and equity audit enhancements, and has been reformatted.	The code has an updated stem and version 'A' identifier and a new stream identified 'SI' to reflect signage work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCSI3007A Apply lines and scrolls	Restructured unit from previous BCF00 Off-Site Construction Training Package, *BCF3026A Apply line and scroll* that has amended content and employability skills and equity audit enhancements, and has been reformatted.	The code has an updated stem and version 'A' identifier and a new stream identified 'SI' to reflect signage work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
		with other construction coding.
CPCCSI3008A Write showcards and chalkboards	Restructured unit from previous BCF00 Off-Site Construction Training Package, *BCF3028A Write tickets and showcards* that has amended content and employability skills and equity audit enhancements, and has been reformatted.	The code has an updated stem and version 'A' identifier and a new stream identified 'SI' to reflect signage work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCSI3009A Screen-print signage	Restructured unit from previous BCF00 Off-Site Construction Training Package, *BCF3030A Screen print* that has amended content and employability skills and equity audit enhancements, and has been reformatted.	The code has an updated stem and version 'A' identifier and a new stream identified 'SI' to reflect signage work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCSI3010A Hand render pictorials	Restructured unit from previous BCF00 Off-Site Construction Training Package, *BCF3062A Hand render pictorials* that has amended content and employability skills and equity audit enhancements, and has been reformatted.	The code has an updated stem and version 'A' identifier and a new stream identified 'SI' to reflect signage work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCSI3011A Use LED technology for signage	New unit reflecting the need to use new technology and techniques for illuminated sign manufacture.	

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
CPCCSI3012A Apply electrical theory for illuminated signage	New unit reflecting the need to use new technology and techniques for illuminated sign manufacture.	
CPCCSI3013A Install LED systems	New unit reflecting the need to use new technology and techniques for illuminated sign manufacture.	
CPCCSI3014A Manufacture gas-charged glass-formed illuminated signage	Restructured unit from previous BCF00 Off-Site Construction Training Package, *BCF3060A Manufacture gas charged glass formed illuminated signs* that has amended content and employability skills and equity audit enhancements, and has been reformatted.	The code has an updated stem and version 'A' identifier and a new stream identified 'SI' to reflect signage work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCSP2001A Handle solid plastering materials	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSP2001B Handle solid plastering materials* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSP2002A Use solid plastering tools and equipment	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSP2002B Use solid plastering tools and equipment* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSP2003A Prepare	Equivalent to existing unit in previous BCG03 General	The code has an updated stem and version 'A' identifier

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surfaces for plastering	Construction Training Package, *BCGSP2003B Prepare surfaces for plastering* that has been reformatted and has employability skills and equity audit enhancements.	(stream and number system remain the same).
CPCCSP3001A Apply float and render to straight and curved surfaces	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSP3001B Apply float and render to straight and curved surfaces* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSP3002A Apply set coats	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSP3002B Apply set coats* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSP3003A Apply trowelled texture coat finishes	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSP3003B Apply trowelled texture coat finishes* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSP3004A Restore and renovate solid plasterwork	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSP3004B Restore and renovate solid plasterwork* that has been reformatted and has employability skills and	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	equity audit enhancements.	
CPCCSP3005A Install pre-cast decorative mouldings	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSP3005B Install pre-cast decorative mouldings* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSP3006A Install cast plaster blockwork	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSP3006B Install cast plaster blockwork* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSP3007A Apply plaster by projection machine	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSP3007B Apply plaster by projection machine* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCST2001A Prepare for stonemasonry construction process	Unit from previous BCF00 Off-Site Construction Training Package, *BCF1000A Prepare for construction process (stonemasonry)* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'ST' to reflect stonemasonry work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCST2002A Identify and use stone products	Unit from previous BCF00 Off-Site Construction	The code has an updated stem and version 'A' identifier and a

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	Training Package, *BCF2000A Identify and use stone products* that has been reformatted and has employability skills and equity audit enhancements.	new stream identified 'ST' to reflect stonemasonry work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCST2003A Finish stone	Unit from previous BCF00 Off-Site Construction Training Package, *BCF2003A Finish stone* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'ST' to reflect stonemasonry work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCST2004A Lay stone	Unit from previous BCF00 Off-Site Construction Training Package, *BCF2017A Lay stone* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'ST' to reflect stonemasonry work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCST2005A Carry out load slinging of off-site materials	Unit from previous BCF00 Off-Site Construction Training Package, *BCF2009A Carry out load slinging of off-site materials* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'ST' to reflect stonemasonry work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained

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		units and ensure consistency with other construction coding.
CPCCST3001A Dress and mould stone	Unit from previous BCF00 Off-Site Construction Training Package, *BCF3035A Dress and mould stone* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'ST' to reflect stonemasonry work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCST3002A Shape solid stone	Unit from previous BCF00 Off-Site Construction Training Package, *BCF3043A Shape solid stone* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'ST' to reflect stonemasonry work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCST3003A Split stone manually	Unit from previous BCF00 Off-Site Construction Training Package, *BCF3066A Split stone manually* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'ST' to reflect stonemasonry work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCST3004A Dress stone manually	Unit from previous BCF00 Off-Site Construction Training Package, *BCF3067A Dress stone manually* that has	The code has an updated stem and version 'A' identifier and a new stream identified 'ST' to reflect stonemasonry work.

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	been reformatted and has employability skills and equity audit enhancements.	Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCST3005A Carry out profile work	Unit from previous BCF00 Off-Site Construction Training Package, *BCG3074A Carry out profile work* has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'ST' to reflect stonemasonry work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCST3006A Machine stone	Unit from previous BCF00 Off-Site Construction Training Package, *BCG3075A Machine stone* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'ST' to reflect stonemasonry work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCST3007A Turn stone	Unit from previous BCF00 Off-Site Construction Training Package, *BCF3019A Turn stone* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'ST' to reflect stonemasonry work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
CPCCST3008A Inlay lead to stone	Unit from previous BCF00 Off-Site Construction Training Package, *BCF3021A Inlay lead to stone* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'ST' to reflect stonemasonry work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCST3009A Use computer-controlled static machinery to produce stone components	Unit from previous BCF00 Off-Site Construction Training Package, *BCF3025A Use computer controlled machinery to produce stone components* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'ST' to reflect stonemasonry work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCST3010A Set out and cut letters in stone	Unit from previous BCF00 Off-Site Construction Training Package, *BCF3034A Set out and cut letters in stone* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'ST' to reflect stonemasonry work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCST3011A Plan monument construction	Unit from previous BCF00 Off-Site Construction Training Package, *BCF3040A Plan monumental construction* that has been reformatted and has employability skills and	The code has an updated stem and version 'A' identifier and a new stream identified 'ST' to reflect stonemasonry work. Units previously had sequential code numbering through all

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	equity audit enhancements.	units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCST3012A Build stone veneer walls	Unit from previous BCF00 Off-Site Construction Training Package, *BCF3061A Build stone veneer walls* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'ST' to reflect stonemasonry work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCST3013A Carry out cemetery monument fixing	Unit from previous BCF00 Off-Site Construction Training Package, *BCF3064A Carry out cemetery monument fixing* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'ST' to reflect stonemasonry work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCST3014A Set and anchor stone facades	Unit from previous BCF00 Off-Site Construction Training Package, *BCF3065A Set and anchor stone facades* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier and a new stream identified 'ST' to reflect stonemasonry work. Units previously had sequential code numbering through all units in BCF00 which has been changed to reflect the streams now allocated to the retained units and ensure consistency with other construction coding.
CPCCSV5001A Assess the	Equivalent to existing unit in	The code has an updated stem

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
construction of domestic scale buildings	previous BCG03 General Construction Training Package, *BCGSV5001A Assess the construction of domestic scale buildings* that has been reformatted and has employability skills and equity audit enhancements.	and version 'A' identifier (stream and number system remain the same).
CPCCSV5002A Evaluate materials for construction of domestic scale buildings	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSV5002A Evaluate materials for construction of domestic scale buildings* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSV5003A Produce working drawings for residential buildings	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSV5003A Produce working drawings for residential buildings* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSV5004A Apply legislation to urban development and building controls	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSV5004A Apply legislation to urban development and building controls* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSV5005A Apply footing and geomechanical design principles to	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSV5005A Apply*	The code has an updated stem and version 'A' identifier (stream and number system

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
domestic scale buildings	*footing and geomechanical design principles to domestic scale buildings* that has been reformatted and has employability skills and equity audit enhancements.	remain the same).
CPCCSV5006A Assess construction faults in residential buildings	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSV5006A Assess construction faults in residential buildings* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSV5007A Undertake site surveys and set-out procedures for building projects	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSV5007A Undertake site surveys and set out procedures to building projects* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSV5008A Apply building control legislation to building surveying	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSV5008A Apply building control legislation to building surveying* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSV5009A Assess the impact of fire on building materials	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSV5009A Assess the impact of fire on building materials* that has been reformatted and has	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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	employability skills and equity audit enhancements.	
CPCCSV5010A Interact with clients in a regulated environment	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSV5010A Interact with clients in a regulated environment* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSV5011A Apply building codes and standards to residential buildings	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSV5011A Apply building codes and standards to residential buildings* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSV5012A Assess timber-framed designs for one and two storey buildings	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSV5012A Assess timber framed designs for one and two storey buildings* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSV5013A Apply principles of energy efficient design to buildings	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSV5013A Apply principles of energy efficient design to buildings* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSV5014A Apply	Equivalent to existing unit in	The code has an updated stem

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building surveying procedures to residential buildings	previous BCG03 General Construction Training Package, *BCGSV5014A Apply building surveying procedures to residential buildings* that has been reformatted and has employability skills and equity audit enhancements.	and version 'A' identifier (stream and number system remain the same).
CPCCSV5015A Assess structural requirements for domestic scale buildings	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSV5015A Assess structural requirements for domestic scale buildings* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSV6001A Assess the construction of buildings up to three storeys	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSV6001A Assess the construction of buildings up to 3 storeys* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSV6002A Produce working drawings for buildings up to three storeys	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSV6002A Produce working drawings for buildings up to 3 storeys* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSV6003A Assess construction faults in buildings up to three storeys	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSV6003A Assess construction faults in buildings up to 3 storeys* that	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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	has been reformatted and has employability skills and equity audit enhancements.	
CPCCSV6004A Apply footing and geomechanical design principles to buildings up to three storeys	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSV6004A Apply footings and geomechanical design principles to buildings up to 3 storeys* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSV6005A Evaluate services layout and connection methods for residential and commercial buildings up to three storeys	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSV6005A Evaluation of services layout and connection methods for residential and commercial buildings up to 3 storeys* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSV6006A Evaluate the use of concrete for residential and commercial buildings up to three storeys	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSV6006A Evaluate the use of concrete for residential and commercial buildings up to 3 storeys* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSV6007A Assess structural requirements for buildings up to three storeys	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSV6007A Assess structural requirements for buildings up to 3 storeys*	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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	that has been reformatted and has employability skills and equity audit enhancements.	
CPCCSV6008A Apply building codes and standards to buildings up to three storeys	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSV6008A Apply building codes and standards to buildings up to 3 storeys* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSV6009A Implement performance-based codes and risk management principles for buildings up to three storeys	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSV6009A Implement performance based codes and risk management principles for buildings up to 3 storeys* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSV6010A Apply fire technology to buildings up to three storeys	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSV6010A Apply fire technology to buildings up to 3 storeys* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSV6011A Apply legal procedures to building surveying	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSV6011A Apply legal procedures to building surveying* that has been reformatted and has employability skills and	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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	equity audit enhancements.	
CPCCSV6012A Facilitate community development consultation	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSV6012A Facilitate community development consultation* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSV6013A Coordinate building refurbishment	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSV6013A Coordinate asset refurbishment* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSV6014A Manage and plan land use	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSV6014A Manage and plan land use* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSV6015A Analyse and present building surveying research information	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGSV6015A Analyse and present building surveying research information* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCSV6016A Apply building surveying procedures to buildings up	Equivalent to existing unit in previous BCG03 General Construction Training	The code has an updated stem and version 'A' identifier (stream and number system

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
to three storeys	Package, *BCGSV6016A Apply building surveying procedures to buildings up to 3 storeys* that has been reformatted and has employability skills and equity audit enhancements.	remain the same).
CPCCVE1001A Undertake a basic construction project	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGVE1002B Undertake a basic construction project* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCVE1002A Undertake a basic computer design project	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGVE1003B Undertake a basic computer design project* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCWC2001A Complete penetrations and flashings	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGWC2004B Complete penetrations and flashings* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCWC3001A Install and finish plasterboard and fibre cement sheeting to curved walls and ceilings	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGWC3002B Install and finish plasterboard and fibre cement sheeting to curved walls and ceilings* that has been reformatted and has	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	employability skills and equity audit enhancements	
CPCCWC3002A Install and finish plasterboard and fibre cement sheeting to arches	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGWC3003B Install and finish plasterboard and fibre cement sheeting to arches walls and ceilings* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCWC3003A Install dry wall passive fire-rated systems	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGWC3005B Install dry wall passive fire-rated systems* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same)
CPCCWC3004A Install suspended ceilings	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGWC3007B Install suspended ceilings* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCWF2001A Handle wall and floor tiling materials	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGWF2001B Handle wall and floor tiling materials* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCWF2002A Use wall and floor tiling tools and	Equivalent to existing unit in previous BCG03 General	The code has an updated stem and version 'A' identifier

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
equipment	Construction Training Package, *BCGWF2002B Use wall and floor tiling tools and equipment* that has been reformatted and has employability skills and equity audit enhancements.	(stream and number system remain the same).
CPCCWF3001A Prepare surfaces for tiling application	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGWF3001B Prepare surfaces for tiling application* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCWF3002A Fix floor tiles	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGWF3002B Fix floor tiles* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCWF3003A Fix wall tiles	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGWF3003B Fix wall tiles* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCWF3004A Repair wall and floor tiles	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGWF3004B Repair wall and floor tiles* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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CPCCWF3005A Carry out decorative tiling	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGWF3005B Carry out decorative tiling* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCWF3006A Carry out mosaic tiling	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGWF3006B Carry out mosaic tiling* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCWF3007A Tile curved surfaces	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGWF3007B Tile curved surfaces* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCWF3008A Tile domestic pools and spas	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGWF3008B Tile domestic pools and spas* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCWP2001A Handle waterproofing materials	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGWP2001B Handle waterproofing materials* that has been reformatted and has employability skills and	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	equity audit enhancements.	
CPCCWP2002A Use waterproofing tools and equipment	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGWP2002B Use waterproofing tools and equipment* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCWP2003A Prepare for construction waterproofing process	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGWP2003B Prepare for construction process (waterproofing)* that has had the title slightly changed, been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCWP2004A Prepare surfaces for waterproofing application	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGWP2004B Prepare surfaces for waterproofing application* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCWP3001A Apply waterproofing process to below ground level wet areas	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGWP3001B Apply waterproofing process to below ground level wet areas* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same)
CPCCWP3002A Apply	Equivalent to existing unit in	The code has an updated stem

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waterproofing process to internal wet areas	previous BCG03 General Construction Training Package, *BCGWP3002B Apply waterproofing process to internal wet areas* that has been reformatted and has employability skills and equity audit enhancements.	and version 'A' identifier (stream and number system remain the same).
CPCCWP3003A Apply waterproofing process to external wet areas	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGWP3003B Apply waterproofing process to external wet areas* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCCWP3004A Apply waterproofing remedial processes	Equivalent to existing unit in previous BCG03 General Construction Training Package, *BCGWP3004B Apply waterproofing remedial processes* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPCM2001A Work effectively in the plumbing and services sector	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPCM2001A Work effectively in the plumbing and services sector* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPCM2002A Carry out interactive workplace	Equivalent to existing unit in previous BCP03 Plumbing	The code has an updated stem and version 'A' identifier

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communication	and Services Training Package, *BCPCM2002A Carry out interactive workplace communication* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	(stream and number system remain the same).
CPCPCM2003A Carry out OHS requirements	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPCM2003A Carry out OHS requirements* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPCM2004A Read plans and calculate plumbing quantities	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPCM2004A Read plans and calculate plumbing quantities* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPCM2005A Handle and store plumbing materials	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPCM2005A Handle and store plumbing*	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	materials that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	
CPCPCM2006A Use plumbing hand and power tools	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPCM2006A Use plumbing hand and power tools* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPCM2007A Carry out levelling	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPCM2007A Carry out levelling* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPCM2008A Cut and join sheet metal	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPCM2008A Cut and join sheet metal* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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	Some technical terms have been amended to be consistent and reflect new technology and work practices.	
CPCPCM2009A Cut using oxy-LPG-acetylene equipment	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPCM2009A Cut with oxy-LPG/acetylene* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPCM2010A Mark out materials	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPCM2010A Mark out materials* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPCM2011A Apply first aid in the workplace	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPCM2011A Apply first aid in the workplace* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
CPCPCM2012A Weld using oxy-acetylene equipment	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPCM2012A Weld using oxy-acetylene equipment* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPCM2013A Weld using arc welding equipment	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPCM2013A Weld using arc welding equipment* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPCM2014A Carry out simple concreting and rendering	New unit for use in plumbing and services qualification reflecting concreting and rendering skills necessary for plumbing work. It replaces *BCGCO2003B Carry out concreting to simple form* packaged in previous plumbing qualifications.	
CPCPCM2015A Work safely on roofs	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPRF2001A Work safely on roofs* that has been re-coded as a Common (CM) unit, reformatted and has employability skills and	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	
CPCPCM3001A Flash penetrations through roofs and walls	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPCM3001A Flash penetrations through roofs and walls* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPCM3002A Weld plastic pipe using fusion method	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPCM3002A Weld polyethylene (PE) pipe using fusion method* that has had a slight title change plus been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPCM3003A Fabricate and install non-ferrous pressure piping	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPCM3003A Fabricate and install non-ferrous pressure piping* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	Some technical terms have been amended to be consistent and reflect new technology and work practices.	
CPCPCM4001A Carry out work-based risk control processes	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPCM4001A Carry out work based risk control processes* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPCM4002A Estimate and cost work	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPCM4002A Estimate and cost work* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPCM4003A Produce 2-D architectural drawings using CAD software	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPCM4003A Produce 2-D architectural drawings using CAD software* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	and work practices.	
CPCPCM4004A Prepare simple sketches and drawings	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPCM4004A Prepare simple sketches and drawings* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPCM5000A Design complex sanitary plumbing and drainage systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPCM5000A Design complex sanitary plumbing and drainage systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPCM5001A Design complex cold water systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPCM5001A Design complex cold water systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
CPCPCM5002A Design complex stormwater and roof drainage systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPCM5002A Design complex stormwater and roof drainage systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPCM5003A Design complex (non-solar) hot water systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPCM5003A Design complex (non-solar) hot water systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPCM5004A Design sewer systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPCM5004A Design sewer systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPDR2001A Locate and clear blockages	Equivalent to existing unit in previous BCP03 Plumbing and Services Training	The code has an updated stem and version 'A' identifier (stream and number system

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	Package, *BCPDR2001A Locate and clear blockages* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	remain the same).
CPCPDR2002A Install domestic treatment plants	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPDR2002A Install domestic treatment plants* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPDR2003A Maintain effluent disinfection systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPDR2003A Maintain effluent disinfection systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPDR2004A Install stormwater and sub-soil drainage systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPDR2004A Install stormwater and sub-soil drainage systems* that	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	
CPCPDR2005A Drain work site	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPDR2005A Drain worksite* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPDR2006A Install prefabricated inspection openings and enclosures	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPDR2006A Install pre-fabricated inspection openings and enclosures* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPDR3001A Plan layout of a residential external sanitary drainage system	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPDR3001A Plan the layout for a residential sanitary drainage system* that has been reformatted and has employability skills and	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	
CPCPDR3002A Install below ground sanitary drainage systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPDR3002A Install below ground sanitary drainage systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPDR3003A Install on-site disposal systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPDR3003A Install on site disposal systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPDR4001A Plan, size and lay out sanitary drainage systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPDR4001A Plan, size and layout sanitary drainage systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	and reflect new technology and work practices.	
CPCPDR4002A Plan, size and lay out stormwater drainage systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPDR4002A Plan, size and layout stormwater drainage systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPDR4003A Plan, size and layout domestic treatment plant disposal systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPDR4003A Plan, size and layout domestic treatment plant disposal systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPFS2001A Connect static storage tanks for fixed fire protection systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPFS2001A Connect static storage tanks* that has been renamed to reflect its purpose, reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	technology and work practices.	
CPCPFS2002A Install portable fire equipment	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPFS2002A Install portable fire equipment* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPFS3001A Fabricate and install fire hydrant and hose reel systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPFS3001A Fabricate and install fire hydrant and hose reel systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPFS3002A Install distribution and range pipes	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPFS3002A Install distribution and range pipes* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPFS3003A Fit off sprinkler heads, controls	Equivalent to existing unit in previous BCP03 Plumbing	The code has an updated stem and version 'A' identifier

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
and ancillary equipment	and Services Training Package, *BCPFS3003A Fit off sprinkler heads controls and ancillary equipment* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	(stream and number system remain the same).
CPCPFS3004A Install control valve assemblies, actuating devices and local alarms	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPFS3004A Install control valve assemblies actuating devices and local alarms* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPFS3005A Test fire protection systems for pressure	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPFS3005A Test fire protection systems for pressure* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPFS3006A Install special hazards systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training	The code has an updated stem and version 'A' identifier (stream and number system

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	Package, *BCPFS3006A Install special hazards systems* that has been reformatted and has employability skills and equity audit enhancements. There have been revisions to the unit to reflect new licensing requirement and use of ozone depleting substances. Some technical terms have been amended to be consistent and reflect new technology and work practices.	remain the same).
CPCPFS3007A Install domestic and residential life safety sprinkler systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPFS3007A Install domestic and residential life safety sprinkler systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPFS3008A Test and maintain fire hydrant and hose reel installations	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPFS3008A Test and maintain fire hydrant and hose reel installations* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPFS3009A Test and maintain automatic fire	Equivalent to existing unit in previous BCP03 Plumbing	The code has an updated stem and version 'A' identifier

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
sprinklers	and Services Training Package, *BCPFS3009A Test and maintain automatic fire sprinklers* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	(stream and number system remain the same).
CPCPFS3010A Design pre-calculated fire sprinkler systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPFS3010A Design pre-calculated fire sprinkler systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same)
CPCPFS4001A Commission domestic and residential fire suppression sprinkler systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPFS4001A Commission domestic and residential fire suppression sprinkler systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPFS4002A Commission and maintain special hazard fire	Equivalent to existing unit in previous BCP03 Plumbing and Services Training	The code has an updated stem and version 'A' identifier (stream and number system

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
suppression systems	Package, *BCPFS4002A Commission and maintain special hazards fire suppression systems* that has been reformatted and has employability skills and equity audit enhancements. There have been revisions to the unit to reflect new licensing requirement and use of ozone depleting substances. Some technical terms have been amended to be consistent and reflect new technology and work practices.	remain the same).
CPCPFS4003A Commission fire system pump sets	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPFS4003A Commission fire system pump sets* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPFS4004A Design domestic and residential fire sprinkler systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPFS4004A Design residential and domestic fire sprinkler systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
CPCPFS4005A Commission fire alarm and detection systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPFS4005A Commission fire alarm and detection systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPFS4006A Commission firefighting appliances	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPFS4006A Commission firefighting appliances* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier.
CPCPFS5000A Design fire-compliant hydraulic services	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPFS5000A Design fire-compliant hydraulic services* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPFS5001A Design fire sprinkler systems	Equivalent to existing unit in previous BCP03 Plumbing	The code has an updated stem and version 'A' identifier

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	and Services Training Package, *BCPFS5001A Design fire sprinkler systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	(stream and number system remain the same).
CPCPFS5002A Design fire hydrant and hose reel systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPFS5002A Design fire hydrant and hose reel systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPGS3001A Install gas piping systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPGS3001A Install gas piping systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPGS3002A Size consumer gas piping systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPGS3002A Size consumer piping systems* that has been reformatted and has	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	
CPCPGS3003A Install and commission Type A gas appliances	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPGS3003A Install and commission Type A gas appliances* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPGS3004A Install LPG storage of aggregate storage capacity up to 500 litres	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPGS3004A Install LP gas storage of aggregate storage capacity up to 500 litres* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPGS3005A Install LPG storage of aggregate storage capacity exceeding 500 litres and less than 8KL	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPGS3005A Install LP gas storage of aggregate capacity exceeding 500 litres and less than 8KL* that has been reformatted and	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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	has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	
CPCPGS3006A Install LPG systems in caravans, mobile homes, water craft and mobile workplaces	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPGS3006A Install LP gas systems in caravans/mobile homes water craft and mobile workplaces* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPGS3007A Install gas detection devices	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPGS3007A Install gas detection devices* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPGS3008A Install gas pressure control equipment	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPGS3008A Install gas pressure control equipment* that has been reformatted and has employability skills and equity audit enhancements.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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	Some technical terms have been amended to be consistent and reflect new technology and work practices.	
CPCPGS3009A Install Type A gas appliance flues	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPGS3009A Install a Type A appliance flue* that has had a slight change to the title and been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPGS3010A Install Type B gas appliance flues	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPGS3010A Install a Type B appliance flue* that has had a slight change to the title and been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPGS3011A Purge consumer piping	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPGS3011A Purge consumer piping* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	been amended to be consistent and reflect new technology and work practices.	
CPCPGS3012A Maintain Type A gas appliances	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPGS3012A Maintain Type A gas appliances* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPGS3013A Disconnect and reconnect Type A gas appliances	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPGS3013A Disconnect and reconnect Type A appliances* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPGS3014A Calculate and install natural ventilation for Type A gas appliances	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPGS3014A Calculate and install natural ventilation for Type A gas appliances* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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	and reflect new technology and work practices.	
CPCPGS3015A Install subsidiary gas meters	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPGS3015A Install subsidiary gas meters* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPGS4001A Plan, size and layout consumer gas installations	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPGS4001A Plan, size and layout consumer gas installations* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPGS4002A Service Type A gas appliances	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPGS4002A Service Type A gas appliances* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPGS4003A Install, commission and service	Equivalent to existing unit in previous BCP03 Plumbing	The code has an updated stem and version 'A' identifier

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
Type B gas appliances	and Services Training Package, *BCPGS4003A Install commission and service Type B gas appliances* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	(stream and number system remain the same).
CPCPIG2001A Design domestic urban irrigation systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPIG2001A Design domestic urban irrigation systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPIG3001A Set out, install and commission irrigation systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPIG3001A Set out install and commission irrigation systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPIG3002A Install and commission domestic irrigation pumps	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPIG3002A Install*	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	and commission domestic irrigation pumps that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	
CPCPMS2001A Assemble mechanical services components	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPMS2001A Assemble mechanical services components* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPMS3001A Fabricate and install steel pressure piping	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPMS3001A Fabricate and install steel pressure piping* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPMS3002A Select and fit insulation and sheathing	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPMS3002A Select and fit insulation and sheathing* that has been	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	
CPCPMS3003A Install small bore heating systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPMS3003A Install small bore heating systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPMS3004A Install medical gas pipeline systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPMS3004A Install medical gas pipeline systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPMS3005A Install and test ducting systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPMS3005A Install and test ducting systems* that has been reformatted and has employability skills and	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	
CPCPMS3006A Install air handling units	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPMS3006A Install air handling units* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPMS3007A Install and test split system air conditioning	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPMS3007A Install split system air conditioning* that has had a slight title change and been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPMS3008A Install air conditioning control equipment	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPMS3008A Install air conditioning control equipment* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	been amended to be consistent and reflect new technology and work practices.	
CPCPMS3009A Maintain mechanical services equipment	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPMS3009A Maintain mechanical services equipment* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPMS3010A Install and maintain evaporative air cooling systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPMS3010A Install and maintain evaporative air cooling systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPMS4001A Plan, size and lay out heating and cooling systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPMS4001A Plan, size and layout heating and cooling systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	and reflect new technology and work practices.	
CPCPMS4002A Commission air and water systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPMS4002A Commission air and water systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPMS4003A Design compressed air systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPMS4003A Design compressed air systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPMS5000A Design steam distribution systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPMS5000A Design steam distribution systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
CPCPMS5001A Design air conditioning and ventilation systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPMS5001A Design air conditioning and ventilation systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPMS5002A Design sound attenuated hydraulic services	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPMS5002A Design sound attenuated hydraulic services* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPMS5003A Design hydronic heating and cooling systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPMS5003A Design hydronic heating and cooling systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPPS5000A Design gas bulk storage systems	Equivalent to existing unit in previous BCP03 Plumbing	The code has an updated stem and version 'A' identifier

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	and Services Training Package, *BCPPS5000A Design gas bulk storage systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	(stream and number system remain the same).
CPCPPS5001A Design industrial gas systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPPS5001A Design industrial gas systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPPS5002A Design gas reticulation systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPPS5002A Design gas reticulation systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPPS5003A Design solar water heating systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPPS5003A Design solar water heating*	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	systems that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	
CPCPPS5004A Conduct a water audit and identify water-saving initiatives	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPPS5004A Conduct a water audit and identify water-saving initiatives* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPPS5005A Design grey water re-use systems in sewered areas	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPPS5005A Design grey water re-use systems in sewered areas* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPPS5006A Design rainwater collection, storage, distribution and re-use systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPPS5006A Design rainwater collection storage distribution and*	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	re-use systems that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	
CPCPPS5007A Design irrigation systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPPS5007A Design irrigation systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPPS5008A Design trade waste pre-treatment systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPPS5008A Design trade waste pre-treatment systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPPS5009A Analyse and report on technical plumbing systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPPS5009A Analyse and report on technical plumbing systems* that has been reformatted and has employability skills and	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	
CPCPPS5010A Design pump systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPPS5010A Design pump systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPPS5011A Coordinate services and penetrations within a building	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPPS5011A Coordinate services and penetrations* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPPS5012A Design siphonic stormwater drainage systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPPS5012A Design siphonic stormwater drainage systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	and reflect new technology and work practices.	
CPCPPS5013A Design vacuum sewerage systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPPS5013A Design vacuum sewerage systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPPS5014A Locate and maintain piping systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPPS5014A Locate and maintain piping systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPPS5015A Inspect plumbing and drainage systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPPS5015A Inspect plumbing and drainage systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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CPCPRF2002A Select and install roof sheeting and wall cladding	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPRF2002A Select and install roof sheeting and wall cladding* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPRF2003A Collect and store roof water	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPRF2003A Collect and store roof water* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPRF2004A Fabricate roof coverings for curved structures	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPRF2004A Fabricate roof coverings for curved structures* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPRF3001A Receive roofing materials	Equivalent to existing unit in previous BCP03 Plumbing and Services Training	The code has an updated stem and version 'A' identifier (stream and number system

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	Package, *BCPRF3001A Receive roofing materials* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	remain the same).
CPCPRF3002A Fabricate and install roof drainage components	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPRF3002A Fabricate and install roof drainage components* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPRF3003A Fabricate and install external flashings	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPRF3003A Fabricate and install external flashings* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPRF3004A Install roof components	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPRF3004A Install roof components* that has been reformatted and has	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	
CPCPRF3005A Install roof coverings to curved roof structures	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPRF3005A Install roof coverings to curved roof structures* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPRF3006A Install composite roof systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPRF3006A Install composite roof systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPRF4001A Plan, size and lay out roof drainage systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPRF4001A Plan, size and layout roof drainage systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	been amended to be consistent and reflect new technology and work practices.	
CPCPSN3001A Plan layout of a residential sanitary plumbing system	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPSN3001A Plan the layout for a residential sanitary plumbing system* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPSN3002A Install discharge pipes	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPSN3002A Install discharge pipes* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPSN3003A Fabricate and install sanitary stacks	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPSN3003A Fabricate and install sanitary stacks* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
CPCPSN3004A Install and fit off sanitary fixtures	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPSN3004A Install and fit off sanitary fixtures* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPSN3005A Install pre-treatment facilities	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPSN3005A Install pre-treatment facilities* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPSN3006A Install sewerage pump sets	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPSN3006A Install sewerage pump sets* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPSN4001A Plan, size and lay out sanitary pipework and fixtures	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPSN4001A Plan size and layout sanitary*	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	pipework and fixtures that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	
CPCPWT3001A Set out and install water services	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPWT3001A Set out and install water services* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPWT3002A Install and adjust water service controls and devices	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPWT3002A Install and adjust water service controls and devices* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPWT3003A Install and commission water heating systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPWT3003A Install and commission water heating systems* that has been reformatted and has employability skills and	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	
CPCPWT3004A Install and maintain domestic water treatment equipment	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPWT3004A Install domestic water treatment equipment* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPWT3005A Install water pump sets	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPWT3005A Install water pump sets* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPWT3006A Fit off and commission hot and cold water services	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPWT3006A Fit off and commission hot and cold water services* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	and reflect new technology and work practices.	
CPCPWT3007A Connect irrigation systems from drinking water supply	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPWT3007A Connect irrigation systems from drinking water supply* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPWT3008A Install water service	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPWT3008A Install water service* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPWT3009A Install water pipe systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPDR3004A Install water mains pipe systems* that has been re-coded as a water stream unit, re-named to better reflect its purpose, reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
	and work practices.	
CPCPWT4001A Plan, size and lay out hot and cold water services and systems	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPWT4001A Plan size and layout hot and cold water services/systems* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPWT4002A Commission and maintain backflow prevention devices	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPWT4002A Commission and maintain backflow prevention devices* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).
CPCPWT4003A Commission and maintain hot water temperature control devices	Equivalent to existing unit in previous BCP03 Plumbing and Services Training Package, *BCPWT4003A Commission and maintain hot water temperature control devices* that has been reformatted and has employability skills and equity audit enhancements. Some technical terms have been amended to be consistent and reflect new technology and work practices.	The code has an updated stem and version 'A' identifier (stream and number system remain the same).

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Unit code and title in this Training Package	Relationship to units in previous Training Package	Comments in relation to previous versions of this Training Package
CPCSUS4001A Implement and monitor environmentally sustainable work practices	New unit developed from Sustainability Victoria guideline units for use in Certificate IV and above construction qualifications	
CPCSUS5001A Develop workplace policies and procedures for sustainability	New unit developed from Sustainability Victoria guideline units for use in Diploma and above construction qualifications	

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Overview

What is a Training Package?

A Training Package is an integrated set of nationally endorsed Competency Standards, Assessment Guidelines and Australian Qualifications Framework (AQF) qualifications for a specific industry, industry sector or enterprise.
Each Training Package:

- provides a consistent and reliable set of components for training, and recognising and assessing people's skills, and may also have optional support materials
- enables nationally recognised qualifications to be awarded through direct assessment of workplace competencies
- encourages the development and delivery of flexible training that suits individual and industry requirements
- encourages learning and assessment in a work-related environment which leads to verifiable workplace outcomes.

How do Training Packages fit within the National Training Framework?
The National Training Framework is made up of the nationally agreed quality arrangements for the vocational education and training sector, the Standards for NVR Registered Training Organisations, and Training Packages endorsed by the National Skills Standards Council (NSSC).
How are Training Packages developed?
Training Packages are developed by Industry Skills Councils or enterprises to meet the identified training needs of specific industries or industry sectors. To gain national endorsement of Training Packages, developers must provide evidence of extensive research, consultation and support within the industry area or enterprise.
How do Training Packages encourage flexibility?
Training Packages describe the skills and knowledge needed to perform effectively in the workplace without prescribing how people should be trained.
Training Packages acknowledge that people can achieve vocational competency in many ways by emphasising what the learner can do, not how or where they learned to do it. For example, some experienced workers might be able to demonstrate competency against the units of competency and even gain a qualification without completing a formal training program.
With Training Packages, assessment and training may be conducted at the workplace, off the job, at a training organisation, during regular work, or through work experience, work placement, work simulation or any combination of these.
Who can deliver and assess using Training Packages?
Training and assessment using Training Packages must be conducted by a registered training organisation (RTO) that has the qualifications or specific units of competency on its scope of registration, or that works in partnership with another RTO as specified in the Standards for NVR Registered Training Organisations.

Training Package components

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

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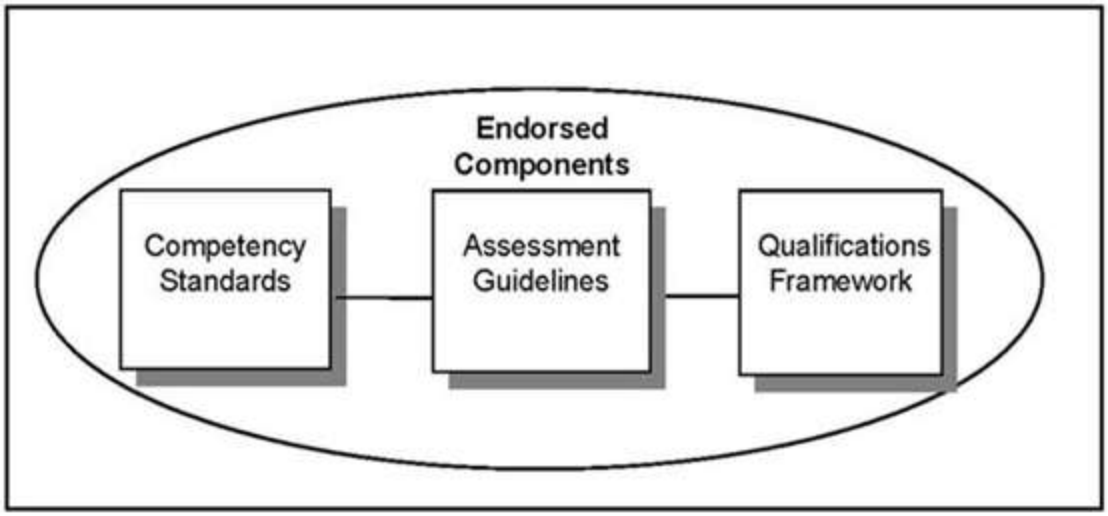
The nationally endorsed components include the Competency Standards, Assessment Guidelines and Qualifications Framework. These form the basis of training and assessment in the Training Package and, as such, they must be used.



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Competency standards

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

Assessment guidelines

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

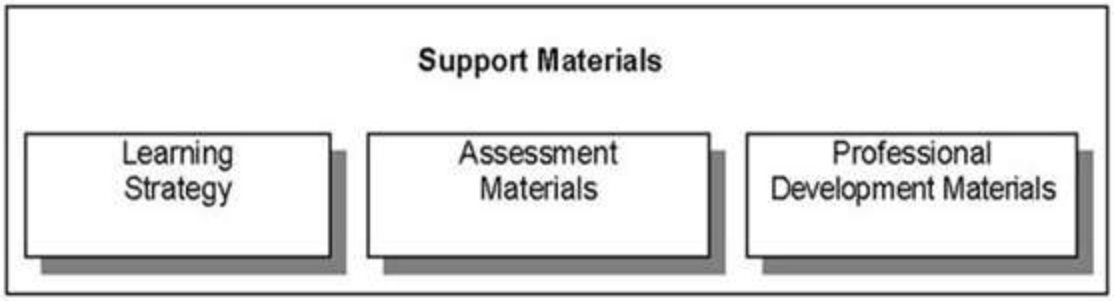
Qualifications framework

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

Training Package support materials

The endorsed components of Training Packages are complemented and supported by optional support materials that provide for choice in the design of training and assessment to meet the needs of industry and learners.

Training Package support materials can relate to single or multiple units of competency, an industry sector, a qualification or the whole Training Package. They tend to fall into one or more of the categories illustrated below.



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Training Package support materials are produced by a range of stakeholders such as RTOs, individual trainers and assessors, private and commercial developers and government agencies.

Training Package, qualification and unit of competency codes

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

Training Package codes

Each Training Package has a unique five-character national code assigned when the Training Package is endorsed, for example CPC08. The first three characters are letters identifying the Training Package industry coverage and the last two characters are numbers identifying the year of endorsement.

Qualification codes

Within each Training Package, each qualification has a unique eight-character code, for example CPC20111. The first three letters identify the Training Package; the first number identifies the qualification level (noting that Arabic numbers are not used in qualification titles themselves); the next two numbers identify the position in the sequence of the qualification at that level; and the last two numbers identify the year in which the qualification was endorsed. (Where qualifications are added after the initial Training Package endorsement, the last two numbers may differ from other Training Package qualifications as they identify the year in which those particular qualifications were endorsed.)

Unit of competency codes

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

A typical code is made up of 12 characters, normally a mixture of upper-case letters and numbers, as in CPCCJS3003A. The first three characters signify the Training Package (CPC in the above example) and up to eight characters, relating to an industry sector, function or skill area, follow. The last character is always a letter and identifies the unit of competency version. The 'A' in the example above indicates that this is the original unit of competency. An incremented version identifier usually means that minor changes have been made. Typically this would mean that wording has changed in the range statement or evidence guide, providing clearer intent. Where changes are made that alter the outcome, a new code is assigned and the title is changed.

Training Package, qualification and unit of competency titles

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

Training Package titles

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

Qualification titles

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

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

For example:

- CPC30211 Certificate III in Carpentry
- CPC40912 Certificate IV in Plumbing and Services.

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

- CPCCBC4028A Prepare design brief for construction works
- CPCPPS5024A Conduct a water audit and identify water-saving initiatives.

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CPC08 Overview

Overview of Version 9

The changes to qualifications and units of competency in Version 9 are a result of feedback provided by stakeholders as part of CPSISC's Training Package Continuous Improvement system.

The changes were overseen by the Construction Industry Advisory Committee (CIAC) as well as Project Steering Committees and subgroups.

Overview of Version 8

Version 8 addresses a number of continuous improvement issues, ranging from technical matters to specific industry requirements.

Some changes reflected in this version of CPC08 have resulted in the need to change the packaging rules for some qualifications.

This version has also seen the addition of two new qualifications, new units of competency and the updating of native and imported units in the Training Package. The other drivers for continuous improvement were the government policy initiatives in the areas of sustainability and flexibility.

In addition to those issues requiring National Skills Standards Council (NSSC) endorsement, a range of other issues that fall within the category of an ISC upgrade have also been implemented in this version of the Training Package.

Such issues include:

- the expansion of elective pools in existing endorsed CPC08 qualifications
- the expansion of unit descriptors and range statements
- minor editorial and formatting changes to add, correct or make content of units and qualifications consistent
- the updating of imported units.

In line with a directive from the CPSISC Construction Industry Advisory Committee (CIAC) to batch changes, this version of the Training Package incorporates both categories of changes.

Overview of Version 7

The model work health and safety (WHS) regulations require a licensed removalist to undertake the removal of asbestos where the area is greater than 10 square metres.

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Licences apply to the removal of friable asbestos (Class A) and non-friable asbestos (Class B). All licensed asbestos removal work requires workers to have completed the specified unit of competency for the type of asbestos to be removed. Supervisors are required to complete a supervisory unit in addition to the unit of competency for the class of removal, Class A or Class B. Assessors must complete the assessor unit of competency 'or equivalent' qualification.

Although this project was undertaken to develop only a small number of units, the development is significant because of its role in the new national WHS licensing context. The project was undertaken following representations from, and commissioning by, Safe Work Australia (SWA), which has led the development of national licensing for the safe removal of asbestos containing materials (ACM).

When approached by SWA, Construction and Property Services Industry Skills Council (CPSISC) was pleased to lend its support to this project to identify and deliver units of competency that reflect the skills and knowledge required by regulators of practitioners. The requirements will be specified through four categories:

- a Class A asbestos removalist licence
- a Class B asbestos removalist licence
- regulated supervisors of the removalist process
- regulated asbestos assessors.

It is of particular importance to note that the four new units of competency added to CPC08 with this Version 7, will be referenced in the new national licensing regime that SWA has negotiated with state and territory regulators.

It should also be noted that although for licensing purposes more than one asbestos-related unit may appear as electives in CPC08 qualifications, individual units will be referenced in regulations. Candidates would select one or more units related to the function they are to perform and the associated regulatory requirement.

Project Steering Committee members involved in Version 7 were:

Project Steering Committee Membership

Member	Representing
Pat Preston (Chair)	Asbestos Contractors Group Ltd (Victoria)
Anita Aiezza	WorkSafe (Victoria)
Simon Cocker	Construction ITAB Network
Lindsay Fraser	Construction, Forestry, Mining and Energy Union (CFMEU)
Michael Gray (Observer)	Department of Education, Employment and Workplace Relations (DEEWR)
Margot Hoyte	Australian Council of Trade Unions (ACTU)

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Project Steering Committee Membership

Katherine Jones	Chief Minister's Department (ACT)
Laurie Kruize	Housing Industry Association
Alex Maroya	Master Builders Australia
Rosalie Mayo-Ramsay	Workcover (NSW)
John Robson	Robson Environmental Pty Ltd
Michael Shepherd	Asbestos Industry Association
Paul Taylor	Safe Work Australia
Guy Valentine	State Training Authority (Queensland)

Overview of Version 6

CPC08 Version 1 was released in early 2009. Since then, there have been four subsequent endorsements of the Training Package. In three of these endorsements new qualifications and units were added to the Training Package, while the other endorsement addressed aligning specific qualifications to licensing requirements. This version is different in that it is primarily focussing on continuous improvement within the Training Package. As a result of the implementation of CPC08 in all states and territories a number of issues have been identified that will improve the Training Package. Version 6 responds to many of those issues. This version also includes significant changes to the packaging of two qualifications in response to changing industry needs. The other major category of changes includes significant work to explicitly embed sustainability into the plumbing and services units in the Training Package. Comprehensive mapping guides have been included for the changes to units of competency and qualifications.

Overview of Version 5

As part of the government's recent *Energy Efficient Homes Package*, in particular the ceiling insulation program, the Department of Environment, Water, Heritage and the Arts (DEWHA) requested the development of nationally recognised training for ceiling insulation installers. CPSISC mapped available competencies and identified three relevant endorsed units:

- CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry
- CPCCCM1006A Work safely at heights
- CPCCPB3014A Install batt insulation products.

Components of a fourth unit, CPCCPB3015A Install acoustic and thermal environmental protection systems, were selected to fill a gap in installing other types of insulation.
A further unit of competency was:

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- CPCCPB3027A Install ceiling insulation to address critical safety requirements in installing ceiling insulation.

Due to the lack of a national unit of competency to cover the work requirements to install ceiling insulation, CPSISC developed training support materials for registered training organisations (RTOs) to deliver the required units of competency (CPCCPB34014A and its prerequisite and co-requisite units CPCCOHS2001A and CPCCCM1006A).
DEWHA's Ceiling Insulation Program competency guidelines also included the acceptance of individual Statements of Attainment against CPCCPB3015A Install acoustic and thermal environmental protection systems as a competency requirement for supervisors of insulation installation.
Through industry consultation it was identified that individual competencies were not sufficient to ensure that supervisors had all the relevant skills and knowledge, especially in critical safety aspects. It was agreed that a new unit of competency which combined all critical functions of installing ceiling insulation should be developed to ensure consistency in training.

Overview of Version 4

The previous CPC40108 Certificate IV in Building and Construction (Building) and CPC50208 Diploma of Building and Construction (Building) qualifications in CPC08, then titled Construction, Plumbing and Services Integrated Framework Training Package, were initially designed to cover higher level building management skills and also to meet registration and licensing requirements for builders in Australian States and Territories.
At the end of the 2007 review of the three Training Packages for the construction, plumbing and services industries, concerns were raised that the requirements for individual registration as a builder were not well aligned to the competency outcomes of these higher level construction qualifications. In some jurisdictions this resulted in the requirement to complete significant additional units of competency in the Diploma in order to meet Builder Registration requirements.
The matter could not be effectively dealt with in the re-development work undertaken during the review as it was only raised, with little detail of the issues, when the review consultation process was near completion. The concerns were not raised earlier because implementation of the qualification had only begun in 2007, so there was very limited industry or RTO experience in using them at the time of the review consultation.
In 2008, in response to further feedback from stakeholders, CPSISC initiated this Version 4 project to seek a better alignment of qualifications to licensing outcomes. Initial consultation with a variety of industry, regulator and RTO stakeholders indicated that the structure of the Certificate IV met the majority of, but not all, jurisdictional categories of limited building registration/licensing. However, it was found that the Diploma structure could be greatly improved by having the underpinning content of some Certificate IV units embedded in it to ensure that training covered the relevant progressive skills required for higher classes of builder registration.

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Classes of builder licensing vary considerably across the country, with some jurisdictions having up to 30 classes or categories of licensing while one jurisdiction has a single class. Mutual recognition of licensing is in place and recognition requirements can be ascertained through the Licence Recognition website (http://www.licencerecognition.gov.au/Default.aspx). The site sets out the scope of building work covered by licence categories in each jurisdiction but does not provide details of competency and qualification requirements for licensing in each case.
In response, CPSISC initiated the Version 4 continuous improvement project to progress the issue and seek a solution.

Overview of Version 3

In 2007 during the review of BCP03 Plumbing and Services Training Package various parties involved in hydraulic design consulting raised the issue of the training and recognition pathway for their workforce using the Training Package qualification pathway. This was set out in a discussion paper circulated by the national Association of Hydraulic Services Consultants Australia (AHSCA), where the main concern was that the Training Package hydraulic design units of competency were embedded in the plumbing services stream of the then Diploma qualification CPC50408 Diploma of Plumbing and Services.
The stream of the Diploma had a prerequisite requirement of completion of the Certificate IV in Plumbing and Services, including the Plumbing and Services – Operations stream. The Certificate IV stream had, in turn, the requirement for prior completion of a relevant trade qualification or equivalent; generally interpreted to mean the completion of a Certificate III in Plumbing. The effect was that an hydraulic services design (HSD) specialisation pathway from the then plumbing and services qualification framework was limited to learners previously completing a trade outcome at Certificate III and then progressing through Certificate IV and Diploma, choosing particular streams in order to gain the range of higher level units of competency necessary to undertake the work. That pathway, still valued by the industry, remains within CPC08 Construction, Plumbing and Services Integrated Framework Training Package, despite the addition of this new Version 3 HSD material.
However, people wanting a career in the field of hydraulic design consulting by entering directly into a Certificate IV specialist hydraulic design pathway and then a specialist Diploma qualification cannot do so under the current packaging rules and entry requirements. The HSD Version 3 additions offer an alternative pathway for hydraulic design consultants within the Training Package.
Members of the PSC involved in Version 3 were:

- Paul Naylor (Chair), Master Plumbers
- Carmel Coate, National Fire Industry Association
- Gary Cook, National Plumbing & Services Training Advisory Group (NPSTAG)
- Michael McGuiness, Australian New Zealand Reciprocity Association
- Stephen Movley, Institute of Plumbing
- Doug McClusky, CEPU – Plumbing Division
- Adrian Hart, Master Plumbers Australia
- John Mahoney, SkillsTech
- Vin Ebeger, Master Plumbers & Mechanical Services Association of Australia
- Murray Thomas, Master Plumbers Association
- Shayne LaCombre, Plumbing Industry Commission.

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Overview of Version 2

The version 2 update of CPC08 came about as a result of the addition of the fire systems design (FSD) material, which itself was the result of CPSISC's response to the long-held need of the fire sector to develop qualifications to support the designers of fire systems.
This small, niche sector is of great importance, given the vital work fire systems designers do in ensuring public safety and the protection of built assets. Yet the design of fire systems was not covered by any formal competency-based qualifications.
The National Fire Industry Association (NFIA) and the Fire Protection Association Australia (FPAA) played a central and active role in the project steering committee and in the development of the FSD qualifications and units of competency. Members of the PSC involved in Version 2 were:

- Wayne Smith (Chair), Fire Protection Industry Board of Queensland Inc and NFIA
- Vince Ball, Executive Director, Construction Industry Training Council, ACT
- Luke Behncke, A/Manager, Curriculum Services Branch, Skills Victoria
- Michael Boyce, Chief Executive Officer, PEER VEET
- Carmel Coate, Executive Director, NFIA
- Paul Deipenau, Service Manager¸ Spectrum Fire Pty Ltd
- Graeme Hunt, Delegate of the Director of Building Control, Department of Justice, Tasmania
- Bill Lea, Managing Director, Prime Water Technologies and FPAA
- Doug McClusky, Training Manager, Communications Electrical Plumbing Union (CEPU) — Plumbing Division
- Roger Thomas, Director of Engineering, Asia Pacific, Tyco Fire Protection Services
- Terry Whitty, Senior Educator, Quality and Curriculum for Building Services, RMIT.

The FSD sector is subject to a range of regulatory and performance requirements arising from fire, plumbing, environmental agencies and Australian standards. The regulatory requirements also vary from and between the various commonwealth, state and territory jurisdictions. It is expected that this sector will be subject to increasing levels of regulatory coverage.

Overview of Version 1

The Training Package review encompassed three previously endorsed Training Packages:

- BCP03 Plumbing and Services Training Package, originally endorsed in October 2003
- BCF00 Off-Site Construction Training Package, originally endorsed in July 2000
- BCG03 General Construction Training Package, endorsed in November 2003 after the review of the previous Training Package originally completed in 1998 and resulted in Certificate IV, Diploma and Advanced Diploma units of competency and qualifications being endorsed in August 2006.

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To ensure that the general and off-site units of competency and qualifications integrate and meet industry needs and that plumbing and services qualifications were relevant to industry needs the review was much more than a technical scoping of the existing units of competency and packaging into qualifications. The reviewed Training Packages were restructured where necessary to provide flexible recognition points for the many specialist job roles that have grown in the industry as new building products are developed and technology and work organisation changes occur.

The review put forward and tested how an Integrated Framework of units of competency and qualifications might work across the breadth of the construction industry for the benefit of all stakeholders. In bringing the three Training Packages under a common umbrella it was not the intention to change the recognition and status of any specialist roles or trade streams of work, but to show how the skills used across the whole industry are complementary.

Under the general theme of *A More Flexible and Responsive Training System* COAG, in February 2006, introduced a set of measures to ensure Australia's training and apprenticeship system offered more flexible pathways into work roles and trades where there are ongoing skill shortages. The Construction and Property Services Industry Skills Council was asked to develop additional, nationally portable qualifications for the General Construction Training Package. The primary intention was to better meet ongoing construction industry skill demands and shortages, provide skill recognition for existing workers and improve productivity and safety.

The result was a suite of six new qualifications; three at Certificate II and three at Certificate III that were endorsed by the National Quality Council in July and September 2006. The qualifications were:

- BCG20306 Certificate II in Steelfixing
- BCG20406 Certificate II in Concreting
- BCG20506 Certificate II in Stonemasonry
- BCG31606 Certificate III in Wall and Ceiling Lining (Plasterboard)
- BCG31506 Certificate III in Formwork/Falsework
- BCG31706 Certificate III in Low Rise Structural Framing.

These intermediate qualifications had significant focus during the review to ensure they were genuinely in demand and supported by industry. There has also been the addition of four further qualifications:

- CPC20208 Certificate II in Construction Pathways
- CPC31608 Certificate III in Paving
- CPC32008 Certificate III in Carpentry and Joinery
- CPC32108 Certificate III in Signage.

Two previous qualifications in the BCF00 Off-Site Construction Training Package have been merged with similar qualifications in the general construction area. These are:

- BCF10100 Certificate I in Construction (Off-Site), now CPC10108 Certificate I in General Construction
- BCF20100 Certificate II in Off-Site Construction, now CPC20108 Certificate II in General Construction and CPC20208 Certificate II in Construction Pathways.

Three previous qualifications in the BCF00 Off-Site Construction Training Package were amalgamated into the single new qualification CPC32108 Certificate III in Signage noted above. These qualifications were:

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- BCF30700 Certificate III in Off-Site Construction (Sign Writing/Computer Operation)
- BCF30800 Certificate III in Off-Site Construction (Sign Manufacture)
- BCF30900 Certificate III in Off-Site Construction (Neon Manufacture).

Two other qualifications previously in BCF00 Off-Site Construction Training Package have been deleted and not replaced as they had no take-up over the past three years and no future demand expressed by stakeholders during consultation. Other Training Package qualifications have been identified as more suitable. The deleted qualifications are:

- BCF30400 Certificate III in Off-Site Construction (Pre-fabrication)
- BCF30500 Certificate III in Off-Site Construction (Machining).
- The review work was overseen by two specialist groups:

The Review Steering Group:

- Lindsay Fraser (Joint Chair), Assistant Secretary, Construction Forestry, Mining and Energy (CFMEU)
- Laurie Kruize (Joint Chair), Manager for Training and Professional Development, Housing Industry Association (HIA)
- Vince Ball, Executive Director, Construction Industry Training Council ACT
- Peter Brilliant, Director, Building Commission Victoria
- Tom Brown, CEO, Thomas Brown Shopfitters Pty Ltd and Australian Shop and Office Fitting Industry Association (ASOFIA)
- Richard Campbell, Manager, Training Products and Support, Queensland Training Authority
- Vin Ebejer, Training Manager, Master Plumbers Australia
- Carlo Garofali, President, Concrete Placers Association NSW
- Neil Gow, National Manager Training Policy, Master Builders Australia
- David Hay, Managing Director, Metal Plaque Pty Ltd and Australian Sign and Graphics Association (ASGA)
- Paul Lawrence, Technical Trainer, Master Builders Australia NSW
- Doug McClusky, Training Manager, Communications Electrical Plumbing Union (CEPU) – Plumbing Division
- Brian Moss, Apprenticeship Manager, Australand
- Barry Peddle, Director, Institute of TAFE South Western NSW, TAFE Directors Australia
- Terry Saunby, Principal Program Manager, Curriculum Centre for Manufacturing, Engineering, Construction and Transport (MECAT), NSW TAFE
- Alan Sparks, CEO, East Coast Apprenticeships
- Glenn Thompson, Training Manager, Australian Manufacturing Workers Union (AMWU)
- Robert Wagner, General Manager, J.H.Wagner & Sons
- Alan Waldron, General Manager, Construction Training Queensland
- Bill Watson, CEO, Connectors Pty Ltd and Master Plumbers Association of Queensland

National Plumbing Review Reference Group:

- Kerry Appelt, TAFE Queensland National Plumbing and Services Training Advisory Group (NPSTAG) Queensland
- Fred Baltetsch, TAFE Victoria National Plumbing and Services Training Advisory Group (NPSTAG) Victoria
- Carmel Coate, Executive Director, National Fire Industry Association (NFIA)

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- Gary Cook, Training Adviser, Sydney Water and National Plumbing and Services Training Advisory Group (NPSTAG) NSW
- Michael McGuiness, Plumbing and Services Regulator, Queensland Australian New Zealand Reciprocity Association
- Stephen Movley, President, Institute of Plumbing WA
- Paul Naylor, CEO, Master Plumbers Association of NSW
- Geoff Sharrock, CEO, Plumbing Industry Commission Victoria
- Bill Watson, CEO, Connectors Pty Ltd and Master Plumbers Association of Queensland

Introduction

In economic terms the construction industry is a major segment of the Australian economy, employing nearly 900,000 people with half of this workforce in the housing sector. The industry is characterised by contracting and with less than 3 persons per firm the norm is micro businesses with owners working directly in a trade area, rather than just business management. The trend toward contracting labour and increasingly labour hire rather than direct employment is more pronounced in the general construction industry than any other. CPC08 Construction, Plumbing and Services Training Package covers occupations and job roles in general and off-site construction, plumbing and services from entry level to management.

There are entry points at Certificate I and Certificate II that have pre-vocational outcomes suitable for entry into Australian Apprenticeships. Stakeholders strongly support achievement of full trade qualifications to help meet ongoing industry skill shortages.

Trade outcomes include shopfitting, joinery, stair building, stonemasonry (monumental/installation), signage, brick and blocklaying, carpentry, concreting, demolition, dogging, painting and decorating, segmental paving, rigging, roof tiling, scaffolding, solid plastering, steelfixing, wall and ceiling lining, wall and floor tiling and waterproofing.

Plumbing and services occupations include coverage of urban irrigation, drainage, metal roofing and cladding, plumbing, mechanical services, roof plumbing, gas fitting and fire protection services.

Certificate IV and Diploma qualifications cover building and plumbing licensing requirements with the Advanced Diploma meeting skills of construction managers. The specialist field of building surveying is included with Diploma and Advanced Diploma outcomes.

Building techniques used in the construction industry have undergone changes in recent years, with significant technological advances in prefabrication, energy efficiency and project management tools. These advancements have affected a wide range of fields, from materials (concrete, metal pre-casting and alternative wood products), management methods (subcontracting, prefabrication and project management) and innovations (robotics, computer aided design and electronically linked project management teams). Benefits of technological advancement are also seen in increased productivity, new capital equipment and the improved energy efficiency of buildings.

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Qualifications Framework

The Australian Qualifications Framework

What is the Australian Qualifications Framework?
A brief overview of the Australian Qualifications Framework (AQF) follows. For a full explanation of the AQF, see the *AQF Implementation Handbook* on the Australian Qualifications Framework (AQF) website <*www.aqf.edu.au*>.
The AQF provides a comprehensive, nationally consistent framework for all qualifications in post-compulsory education and training in Australia. In the vocational education and training (VET) sector it assists national consistency for all trainees, learners, employers and providers by enabling national recognition of qualifications and Statements of Attainment.
Training Package qualifications in the VET sector must comply with the titles and guidelines of the AQF. Endorsed Training Packages provide a unique title for each AQF qualification which must always be reproduced accurately.

Qualifications

Training Packages can incorporate the following AQF qualifications.

- Certificate I in …
- Certificate II in …
- Certificate III in …
- Certificate IV in …
- Diploma of …
- Advanced Diploma of …
- Graduate Certificate in …
- Graduate Diploma of …

On completion of the requirements defined in the Training Package, a registered training organisation (RTO) should issue a nationally recognised AQF qualification. Issuance of AQF qualifications must comply with the advice provided in the current *AQF Implementation Handbook* and the *Standards for NVR Registered Training Organisations*.

Statement of Attainment

A Statement of Attainment is issued by a Registered Training Organisation when an individual has completed one or more units of competency from nationally recognised qualification(s)/courses(s). Issuance of Statements of Attainment must comply with the advice provided in the current *AQF Implementation Handbook* and the *Standards for NVR Registered Training Organisations*.
Under the *Standards for NVR Registered Training Organisations*, RTOs must recognise the achievement of competencies as recorded on a qualification testamur or Statement of Attainment issued by other RTOs. Given this, recognised competencies can progressively build towards a full AQF qualification.

AQF Guidelines and Learning Outcomes

The *AQF Implementation Handbook* provides a comprehensive guideline for each AQF qualification.
Career pathways in the construction, plumbing and services industries
The diagram below represents the qualification pathways in CPC08 Construction, Plumbing and Services Training Package.

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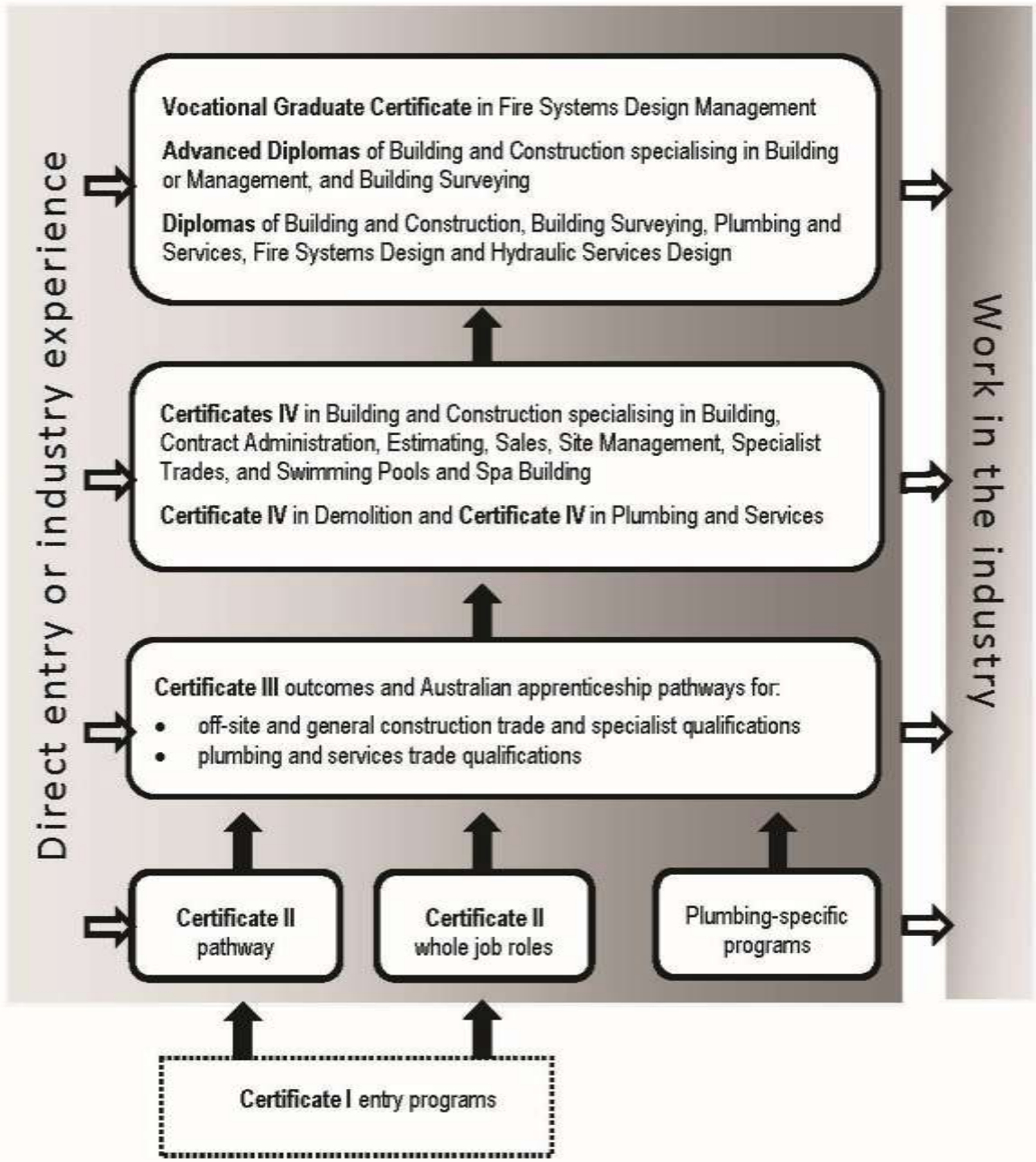
Career pathways in the construction, plumbing and services industries

The diagram below represents the qualification pathways in CPC08 Construction, Plumbing and Services Training Package.



All qualifications are open to direct entry, with the exception of the operations stream in the Certificate IV in Plumbing and Services and the plumbing and services stream in the Diploma of Plumbing and Services and also the Diploma of Hydraulic Services Design.

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Skill sets

Skill sets

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

Skill sets in CPC08 Construction, Plumbing and Services Training Package

Skill sets are groups of units of competency that reflect a cohesive industry outcome, but one which is insufficient for a full Australian Qualifications Framework (AQF) award. Skill sets may also provide a bridge between qualifications, respond to regulatory needs or identify an emerging skill area.

Undertake trade contracting
This skill set addresses the skills used by experienced tradespersons operating as sole traders or with limited staff who contract their services to builders. They may be in the early stages of developing and growing their newly established businesses. The skill set provides an initial set of business skills to support contractors' existing trade skills. The completion of this skill set provides a pathway to a range of Certificate IV qualifications in CPC08. The suggested form of words for inclusion on a Statement of Attainment is: These units from CPC08 Construction, Plumbing and Services Training Package meet industry requirements for experienced tradespersons performing trade contracting work in the construction industry. Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.
Packaging rules

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Undertake trade contracting	
CPCCBC4004A	Identify and produce estimated costs for building and construction projects
CPCCBC4024A	Resolve business disputes
CPCCBC4034A	Apply codes and standards to building trade and services contracting
BSBCUS301B	Deliver and monitor a service to customers
BSBOHS403B	Identify hazards and assess OHS risks
BSBSMB401A	Establish legal and risk management requirements of small business
BSBSMB406A	Manage small business finances

Plus one of the following units:

BSBWRT401A	Write complex documents
CPCCBC4025A	Manage personal work priorities and professional development
CPCCBC4031A	Process client requirements

Lead a building, construction or plumbing and services team
This skill set addresses the skills used by experienced tradespersons and operators who are moving into roles with additional responsibility and team leadership, typically in smaller businesses. The skill set provides the team leadership and other skills to enable experienced site supervisors or builders to develop staff under their supervision. The completion of this skill set provides a pathway to a range of Certificate IV qualifications in CPC08, including credit towards the Certificate IV in Plumbing and Services. The suggested form of words for inclusion on a Statement of Attainment is: These units from CPC08 Construction, Plumbing and Services Training Package meet industry requirements for experienced tradespersons and operators working as building, construction or plumbing and services team leaders in the construction and plumbing and services industry. Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this

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Lead a building, construction or plumbing and services team	
requirement.	
Packaging rules	
CPCCBC4002A	Manage occupational health and safety in the building and construction workplace
CPCCBC4009B	Apply legal requirements to building and construction projects
BSBWOR402A	Promote team effectiveness

Manage complex building projects
This skill set addresses the skills used by builders to manage complex and diverse building projects. The range and depth of skills required of builders is amplified by the size and complexity of the projects on which they work. This skill set is a bridge for experienced builders already operating at the Certificate IV level who are preparing to undertake larger scale projects which may entail developing additional skills and also, possibly, seeking a higher level of builder's licence in the relevant State or Territory. This skill set may be supported by continuing professional development programs which are increasingly required of builders. The completion of this skill set provides a pathway to a Diploma qualification in CPC08. The suggested form of words for inclusion on a Statement of Attainment is: These units from CPC08 Construction, Plumbing and Services Training Package meet industry requirements for experienced builders preparing to undertake complex building projects requiring additional administrative and technical skills and a higher level of builder's licence in some jurisdictions. Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Packaging rules	
CPCCBC5001B	Apply building codes and standards to the construction process for medium rise building projects
CPCCBC5003A	Supervise the planning of on-site medium rise building or construction work
CPCCBC5007B	Administer the legal obligations of a building or construction contractor

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Manage complex building projects	
CPCCBC5018A	Apply structural principles to the construction of medium rise buildings

Employability skills

Employability Skills Framework

The following table contains the employability skills facets identified in the report *Employability Skills for the Future*.

Skill	Facets Aspects of the skill that employers identify as important. The nature and application of these facets will vary depending on industry and job type.
Communication that contributes to productive and harmonious relations across employees and customers	• listening and understanding • speaking clearly and directly • writing to the needs of the audience • negotiating responsively • reading independently • empathising • using numeracy effectively • understanding the needs of internal and external customers • persuading effectively • establishing and using networks • being assertive • sharing information • speaking and writing in languages other than English
Teamwork that contributes to productive working relationships and outcomes	• working across different ages irrespective of gender, race, religion or political persuasion • working as an individual and as a member of a team • knowing how to define a role as part of the team • applying teamwork to a range of situations e.g. future planning and crisis problem solving • identifying the strengths of team members • coaching and mentoring skills, including giving feedback
Problem solving that contributes to productive outcomes	• developing creative, innovative and practical solutions • showing independence and initiative in identifying and solving problems • solving problems in teams

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	• applying a range of strategies to problem solving • using mathematics, including budgeting and financial management to solve problems • applying problem-solving strategies across a range of areas • testing assumptions, taking into account the context of data and circumstances • resolving customer concerns in relation to complex project issues
Initiative and enterprise that contribute to innovative outcomes	• adapting to new situations • developing a strategic, creative and long-term vision • being creative • identifying opportunities not obvious to others • translating ideas into action • generating a range of options • initiating innovative solutions
Planning and organising that contribute to long and short-term strategic planning	• managing time and priorities – setting time lines, coordinating tasks for self and with others • being resourceful • taking initiative and making decisions • adapting resource allocations to cope with contingencies • establishing clear project goals and deliverables • allocating people and other resources to tasks • planning the use of resources, including time management • participating in continuous improvement and planning processes • developing a vision and a proactive plan to accompany it • predicting – weighing up risk, evaluating alternatives and applying evaluation criteria • collecting, analysing and organising information • understanding basic business systems and their relationships
Self-management that contributes to employee satisfaction and growth	• having a personal vision and goals • evaluating and monitoring own performance • having knowledge and confidence in own ideas and visions • articulating own ideas and visions • taking responsibility
Learning that contributes to ongoing improvement and expansion in employee and company operations and outcomes	• managing own learning • contributing to the learning community at the workplace • using a range of mediums to learn – mentoring, peer support and networking, IT and courses • applying learning to technical issues (e.g. learning about products) and people issues (e.g. interpersonal and cultural aspects of work) • having enthusiasm for ongoing learning • being willing to learn in any setting – on and off the job • being open to new ideas and techniques

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	• being prepared to invest time and effort in learning new skills • acknowledging the need to learn in order to accommodate change
Technology that contributes to the effective carrying out of tasks	• having a range of basic IT skills • applying IT as a management tool • using IT to organise data • being willing to learn new IT skills • having the OHS knowledge to apply technology • having the appropriate physical capacity

Employability Skills Summary

An Employability Skills Summary exists for each qualification. Summaries provide a lens through which to view employability skills at the qualification level and capture the key aspects or facets of the employability skills that are important to the job roles covered by the qualification. Summaries are designed to assist trainers and assessors to identify and include important industry application of employability skills in learning and assessment strategies. The following is important information for trainers and assessors about Employability Skills Summaries.

Employability Skills Summaries provide examples of how each skill is applicable to the job roles covered by the qualification.

Employability Skills Summaries contain general information about the industry context which is further explained as measurable outcomes of performance in the units of competency in each qualification.

The detail in each Employability Skills Summary will vary depending on the range of job roles covered by the qualification in question.

Employability Skills Summaries are not exhaustive lists of qualification requirements or checklists of performance (which are separate assessment tools that should be designed by trainers and assessors after analysis at the unit level).

Employability Skills Summaries contain information that may also assist in building learners' understanding of industry and workplace expectations.

Industry requirements for employability skills

For more information on employability skills in the Construction and Property Services Industry Skills Council (CPSISC) Training Packages go to the CPSISC website at www.cpsisc.com.au (www.cpsisc.com.au).

Assessment Guidelines

Introduction

These Assessment Guidelines provide the endorsed framework for assessment of units of competency in this Training Package. They are designed to ensure that assessment is consistent with the *Standards for NVR Registered Training Organisations*. Assessments against the units of competency in this Training Package must be carried out in accordance with these Assessment Guidelines.

Assessment system overview

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This section provides an overview of the requirements for assessment when using this Training Package.

Benchmarks for assessment

Assessment within the National Skills Framework is the process of collecting evidence and making judgements about whether competency has been achieved to confirm whether an individual can perform to the standards expected in the workplace, as expressed in the relevant endorsed unit of competency.
In the areas of work covered by this Training Package, the endorsed units of competency are the benchmarks for assessment. As such, they provide the basis for nationally recognised Australian Qualifications Framework (AQF) qualifications and Statements of Attainment issued by Registered Training Organisations (RTOs).

Australian Quality Training Framework assessment requirements

Assessment leading to nationally recognised AQF qualifications and Statements of Attainment in the vocational education and training sector must meet the requirements of the *Standards for NVR Registered Training Organisations* as expressed in the essential conditions and standards for initial registration and continuing registration, which may be downloaded from < www.asqa.gov.au>.
These essential conditions and standards for initial registration and continuing registration of training organisations also provide information on:

- registration of training organisations
- quality training and assessment
- assessor competency requirements
- assessment requirements
- assessment strategies
- national recognition
- access and equity and client outcomes
- monitoring assessments
- recording assessment outcomes
- issuing AQF qualifications and Statement of Attainment (see also the *Standards for NVR Registered Training Organisations* and the AQF Implementation Handbook - available on the AQF website <www.aqf.edu.au>).

Licensing requirements

A number of occupations and job roles covered by the units of competency and qualifications in CPC08 Construction, Plumbing and Services Training Package may be subject to state and territory licensing requirements. These requirements vary significantly across jurisdictions. There are 13 specific units of competency agreed by all work health and safety (WHS) regulators and the Australian Safety and Compensation Council (ASCC) as meeting certain licensing categories. These units of competency include:

- The unit CPCCOHS1001A Work safely in the construction industry aligned at Certificate I meets the requirement for the National Code of Practice for Induction for Construction Work (ASCC 2007)

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- 12 high risk work licensing units of competency that support the implementation of the National Standard for Licensing Persons Performing High Risk Work (ASCC, April 2006) and these are identified as licensing competencies in the unit code and unit descriptor.

* Note: CPSISC advises that references to OHS will be progressively updated in this and future versions of CPC08 content to reflect the legislated change in the term from occupational health and safety (OHS) to work health and safety (WHS).

Licensing units of competency may be packaged into a qualification, included in a skill set, or delivered and assessed as stand-alone units.
The National Standard for licensing persons performing high risk work provides the overarching regulatory framework for the delivery and assessment of the licensing units of competency. State/territory WHS authorities have mandated the use assessment instruments for the 12 high risk work licensing units of competency. The assessment instruments have been endorsed by the national body responsible for WHS matters. For further information contact your state/territory WHS authority.
The high risk work licensing units of competency include:

High risk work licensing unit	**Aligned to qualification in CPC08**	**Core or elective**
CPCCLTC4001A Licence to operate a tower crane	CPC40611 Certificate IV in Building and Construction (Specialist Trades)	Core (crane operations stream)
CPCCLTC4002A Licence to operate a self-erecting tower crane	CPC40611 Certificate IV in Building and Construction (Specialist Trades)	Core (crane operations stream)
CPCCLSF2001A Licence to erect, alter and dismantle scaffolding basic level	CPC30911 Certificate III in Scaffolding	Core
CPCCLSF3001A Licence to erect, alter and dismantle scaffolding intermediate level	CPC30911 Certificate III in Scaffolding	Core
CPCCLSF4001A Licence to erect, alter and dismantle scaffolding advanced level	CPC40611 Certificate IV in Building and Construction (Specialist Trades)	Core (Rigging stream)
CPCCLRG3001A Licence to perform rigging	CPC30711 Certificate III in Rigging	Core

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High risk work licensing unit	Aligned to qualification in CPC08	Core or elective
basic level		
CPCCLRG3002A Licence to perform rigging intermediate level	CPC30711 Certificate III in Rigging	Core
CPCCLRG4001A Licence to perform rigging advanced level	CPC40611 Certificate IV in Building and Construction (Specialist Trades)	Core (Rigging stream)
CPCCLHS3001A Licence to operate a personnel and materials hoist	CPC30711 Certificate III in Rigging	Elective
CPCCLHS3002A Licence to operate a materials hoist	CPC30711 Certificate III in Rigging	Elective
CPCCLDG3001A Licence to perform dogging	CPC30511 Certificate III in Dogging	Core
CPCCLBM3001A Licence to operate a concrete placing boom	CPC30313 Certificate III in Concreting	Elective

For further information on the implementation of these units and the National Standard for licensing persons performing high risk work visit:
http://www.ascc.gov.au/ascc/healthsafety/trainingskillslicensing/licensing/licensing.htm
Plumbing and services
The plumbing and services industry places a premium on skills and knowledge that can be demonstrated in a real workplace environment. Whilst assessment of some of the units of competency in CPC08 can be carried out in a simulated work environment, the industry strongly recommends that assessment is conducted in the workplace, wherever possible.
When selecting a plumbing and services qualification, including choice of electives, reference should be made to the requirement identified by the Australian and New Zealand Reciprocity Association that the following units must be completed for the range of plumbing specialisations which are used within the States and Territories for licensing purposes:

All streams

CPCPCM4011A Carry out work-based risk control processes

CPCPCM4012A Estimate and cost work

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BSBSMB401A	Establish legal and risk management requirements of small business

Water supply

CPCPWT4011B	Design and size heated and cold water services and systems
CPCPWT4022A	Commission and maintain backflow prevention devices
CPCPWT4023A	Commission and maintain hot and heated water temperature control devices

Drainage

CPCPDR4011B	Design and size sanitary drainage systems
CPCPDR4012B	Design and size stormwater drainage systems
CPCPDR4013B	Design and size domestic treatment plant disposal systems

Sanitary

CPCPSN4011B	Design and size sanitary plumbing systems

Fire services

CPCPFS4021A	Commission domestic and residential fire suppression sprinkler systems
CPCPFS4022A	Commission and maintain special hazard fire suppression systems
CPCPFS4023A	Commission fire system pumpsets
CPCPFS4024A	Design residential and domestic fire sprinkler systems

Gasfitting

CPCPGS4011C	Design and size consumer gas installations
CPCPGS4022A	Service Type A gas appliances

Air conditioning and mechanical services

CPCPMS4011B	Design, size and lay out heating and cooling systems
CPCPMS4022A	Commission air and water systems

Roofing

CPCPRF4011B	Design and size roof drainage systems

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Licensing authorities

Licensing authorities across Australia have actively participated in the development of this Training Package and it is envisaged that over time the state and territory licensing requirements in a number of occupations will be aligned with the units of competency and qualifications in this Training Package. There is no one 'national' licence for the sector or any of its functions. Certification responsibilities and systems are administered by state legislation and may differ between States and Territories.

The developers of this Training Package, together with the Department of Industry, consider that the licensing/registration requirements described in this section apply to RTOs, assessors or candidates with respect to this Training Package. While reasonable care has been taken in its preparation, the developers of this Training Package and the Department of Industry cannot guarantee that the list is definitive or accurate at the time of reading; the information in this section is provided in good faith on that basis.

In order to conduct assessments for statutory licensing or other industry registration conditions, assessors may need to meet additional requirements. While RTOs may have information on the licensing requirements for their particular State or Territory, these requirements may change over time and differ between State and Territory jurisdictions. Users of this Training Package are therefore advised to consult the relevant occupational licensing authority in their State or Territory to determine the specific licensing requirements. The regulatory authorities for the building and construction and plumbing and services industries at the time of endorsement of this Training Package are:

Regulators for carpenters, joiners, builders and building related occupations		
State	Regulator	Contact details
NSW	Office of Fair Trading	PO Box 972 Parramatta NSW 2124 Tel: 13 32 20 Fax: (02) 9895 0222 www.fairtrading.nsw.gov.au
VIC	Victoria Building Commission	PO Box 536E Melbourne VIC 3001 Tel: (03) 9285 6400 or 1300 815 127 Email: technicalenquiry@buildingcommission.com.au www.buildingcommission.com.au
QLD	Building Services Authority	GPO Box 5099 Brisbane QLD 4001 Tel: 1300 272 272 Fax: (07) 3225 2829 Email: info@bsa.qld.gov.au

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Regulators for carpenters, joiners, builders and building related occupations		
State	Regulator	Contact details
		www.bsa.qld.gov.au
WA	Builders Registration Board of Western Australia	Locked Bag 12 West Perth WA Tel: (08) 9476 1200 Fax: (08) 9476 1276 Email: registrar@builders.wa.gov.au www.builders.wa.gov.au
SA	Office of Consumer and Business Affairs	GPO Box 1719 Adelaide SA 5001 DX225 Tel: (08) 8204 9644 Fax: (08) 8204 9697 Email: bld.bos@agd.sa.gov.au www.ocba.sa.gov.au/licensing
TAS	Workplace Standards Tasmania	PO Box 56 Rosny Park TAS 7018 Tel: (03) 6233 7657 Fax: (03) 6233 8338 Email: wstinfo@justice.tas.gov.au www.wst.tas.gov.au
ACT	ACT Planning and Land Authority	GPO Box 1908 Canberra ACT 2601 Tel: (02) 6207 1923 www.actpla.act.gov.au/customer_information/industry
NT	NT Building Practitioners Board	GPO Box 1680 Darwin NT 0801 Ph: (08) 8936 4082 Fax (08) 8936 4080 Email: bpb@nt.gov.au www.nt.gov.au/bpb

Regulators for plumbers and gasfitters

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State	Regulator	Contact details
NSW	Office of Fair Trading	PO Box 972 Parramatta NSW 2124 Tel: 13 32 20 Fax: (02) 9895 0222 www.fairtrading.nsw.gov.au
VIC	Plumbing Industry Commission	GPO Box 536 Melbourne VIC 3001 Tel: 1300 815 127 Fax: 03 9618 9049 Email: mail@pic.vic.gov.au www.pic.vic.gov.au
QLD (For all plumbing licences and registrations)	Plumbing Industry Council	PO Box 15027 City East QLD 4002 Free Call: 1800 682 021 Tel: (07) 3235 4149 Email: plumbers@dip.qld.gov.au www.dlgp.qld.gov.au/plumbing/plumbing-industry-council.html
QLD (For all gasfitting licences and registrations)	Department of Mines and Energy	PO Box 15216 City East QLD 4002 Tel: (07) 3237 1626 Email: gassafe@dme.qld.gov.au www.dme.qld.gov.au
QLD (for contractor licences)	Building Services Authority	GPO Box 5099 Brisbane QLD 4001 Tel: 1300 272 272 Fax: (07) 3225 2999 Email: info@bsa.qld.gov.au www.bsa.qld.gov.au
WA (For all plumbing licences and registrations)	Department of Consumer and Employment Protection (Plumbers Licensing Board)	Locked Bag 12 West Perth WA 6872 Tel: (08) 9476 1377 Email: plumbers@commerce.wa.gov.au www.plumbers.wa.gov.au

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Regulators for plumbers and gasfitters		
State	Regulator	Contact details
WA (For all gasfitting licences and registrations)	Energy Safety	PO Box 135 Cannington WA 6987 Tel: (08) 9422 5200 Fax: (08) 9422 5244 Email: energysafety@commerce.wa.gov.au www.commerce.wa.gov.au/EnergySafety
SA	Office of Consumer and Business Affairs	GPO Box 1719 Adelaide SA 5001 DX225 Tel: (08) 8204 9696 Fax: (08) 8204 9697 Email: pge.bos@agd.sa.gov.au www.ocba.sa.gov.au/licensing
TAS	Workplace Standards Tasmania	PO Box 56 Rosny Park TAS 7018 Tel: (03) 6233 7657 Fax: (03) 6233 8338 Email: wstinfo@justice.tas.gov.au www.wst.tas.gov.au
ACT	ACT Planning and Land Authority	GPO Box 1908 Canberra ACT 2601 Tel: (02) 6207 1923 www.actpla.act.gov.au/customer_information/industry
NT	Plumbers and Drainers Licensing Board	GPO Box 1680 Darwin NT 0801 Tel: (08) 8936 4083 Fax: (08) 8936 4080 Email: pdlb@nt.gov.au www.nt.gov.au/plumberslicensing

Requirements for Assessors

In order to deliver the qualifications contained in this Training Package, assessors delivering qualifications from this CPC08 Construction, Plumbing and Services Training Package should have the following minimum competency, recognition and experience:

- formal recognition of competency at least to the level being assessed

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- relevant industry experience, that is, workplace experience within the last two years in the competency area being delivered
- relevant occupational registration or licensing in areas where this is a regulatory requirement to practise in the jurisdiction where the qualification is being assessed.

Assessing competence at higher AQF levels

In order to assess competence in qualifications within this Training Package at Certificate IV to Advanced Diploma level (excluding the Diploma and Advanced Diploma of Building Surveying), assessors or assessment team members collectively should have the following minimum competency, recognition and experience:

Certificate IV

Recommended construction industry requirements for assessors relative to vocational competencies:

- relevant vocational competencies and current industry experience at a professional or para-professional level in the construction industry.

This may be evidenced by registration on the National Building Professionals Register (at either levels 1 or 2) or registration on the National Building Technologists Register (at level 1).

Examples of appropriate employment include:

- principal or senior manager of a building practice constructing several complete houses a year
- project manager, contracts manager, site manager, quantity surveyor or general foreman on larger construction projects
- possession of a nationally recognised Statement of Attainment or qualification covering the units of competency being delivered and/or accepted by industry as a subject matter expert; where subject matter expertise can be evidenced by other credentials or confirmed experience equivalent to a nationally recognised AQF qualification in the subject area.

Examples of formal recognition are:

- proof of membership of a relevant professional body to at least Associate or Corporate (Chartered) level.

Diploma

Recommended construction industry requirements for assessors relative to vocational competencies:

- current industry experience at a professional or para-professional level in the construction industry.

This may be evidenced by registration on the National Building Professionals Register (at level 1).

Examples of appropriate employment include:

- principal or senior manager of a building practice working in the commercial construction sector and/or completing a significant number of residential or commercial projects each year, including a number of concurrent projects
- project manager, contracts manager or other senior manager for a building practice working in the commercial construction sector and/or completing a significant number of residential or commercial projects each year, including a number of concurrent projects

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- possession of a nationally recognised Statement of Attainment or qualification covering the units of competency being delivered and/or accepted by industry as a subject matter expert; where subject matter expertise can be evidenced by other credentials or confirmed experience equivalent to a nationally recognised AQF qualification in the subject area.

Examples of formal recognition are:

- proof of membership of a relevant professional body to at least Corporate (Chartered) level.

Advanced Diploma

Recommended construction industry requirements for assessors relative to vocational competencies:

- current industry experience at a professional or para-professional level in the construction industry.

This may be evidenced by registration on the National Building Professionals Register (at level 1).

Examples of appropriate employment include:

- principal or senior manager of a building practice working in the commercial construction sector and/or completing a significant number of large scale and high rise projects each year, including a number of concurrent projects
- project manager, contracts manager or other senior manager for a building practice working in the commercial construction sector and/or completing a significant number of large scale and high rise projects each year, including a number of concurrent projects
- possession of a nationally recognised Statement of Attainment or qualification covering the units of competency being delivered and/or accepted by industry as a subject matter expert; where subject matter expertise can be evidenced by other credentials or confirmed experience equivalent to a nationally recognised AQF qualification in the subject area.

Examples of formal recognition are:

- proof of membership of a relevant professional body to at least Corporate (Chartered) level.

RTO assessments

The RTO's assessments meet the requirements of the endorsed components of Training Packages and the outcomes specified in accredited courses within the scope of its registration. The RTO must ensure that assessments (including RPL):

- comply with the Assessment Guidelines included in the applicable nationally endorsed Training Packages or the assessment requirements specified in accredited courses
- lead to the issuing of a statement of attainment or qualification under the AQF when a person is assessed as competent against nationally endorsed unit(s) of competency in the applicable Training Package or modules specified in the applicable accredited course
- are valid, reliable, fair and flexible
- provide for applicants to be informed of the context and purpose of the assessment and the assessment process

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- where relevant, focus on the application of knowledge and skill to the standard of performance required in the workplace and cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- involve the evaluation of sufficient evidence to enable judgements to be made about whether competency has been attained
- provide for feedback to the applicant about the outcomes of the assessment process and guidance on future options
- are equitable for all persons, taking account of individual needs relevant to assessment
- provide for reassessment on appeal.

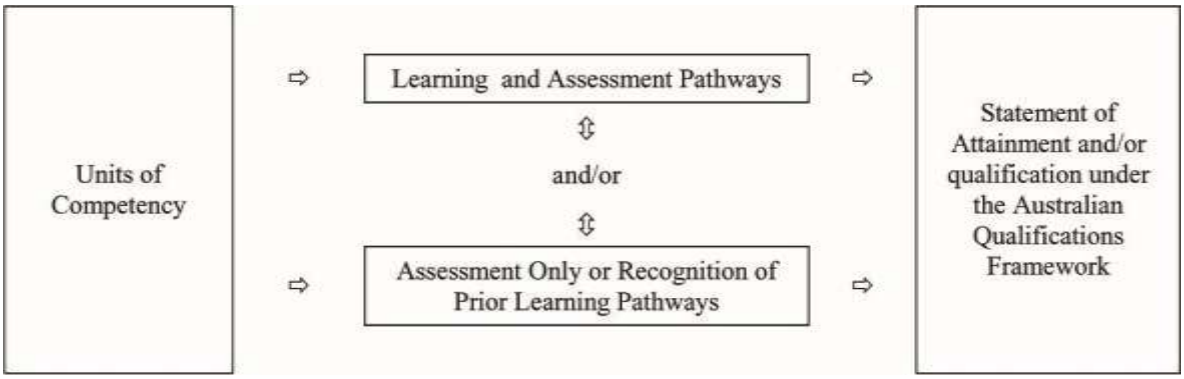
The RTO must ensure that RPL is offered to all applicants on enrolment
The RTO must have an RPL process that:
i is structured to minimise the time and cost to applicants
ii provides adequate information, support and opportunities for participants to engage in the RPL process.

Pathways

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

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

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



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Each of these assessment pathways leads to full recognition of competencies held – the critical issue is that the candidate is competent, not how the competency was acquired. Assessment, by any pathway, must comply with the assessment requirements set out in the Assessment Guidelines of the Training Package and the *Standards for NVR Registered Training Organisations*.

Learning and assessment pathways

Usually, learning and assessment are integrated, with assessment evidence being collected and feedback provided to the candidate at any time throughout the learning and assessment process.

Learning and assessment pathways may include structured programs in a variety of contexts using a range of strategies to meet different learner needs. Structured learning and assessment programs could be: group-based, work-based, project-based, self-paced, action learning-based; conducted by distance or e-learning; and/or involve practice and experience in the workplace.

Learning and assessment pathways to suit Australian Apprenticeships have a mix of formal structured training and structured workplace experience with formative assessment activities through which candidates can acquire and demonstrate skills and knowledge from the relevant units of competency.

Assessment-only or recognition of prior learning pathway

Competencies already held by individuals can be formally assessed against the units of competency in this Training Package, and should be recognised regardless of how, when or where they were achieved.

In an assessment-only or recognition of prior learning (RPL) pathway, the candidate provides current, quality evidence of their competency against the relevant unit of competency. This process may be directed by the candidate and verified by the assessor, such as in the compilation of portfolios; or directed by the assessor, such as through observation of workplace performance and skills application, and oral and/or written assessment. Where the outcomes of this process indicate that the candidate is competent, structured training is not required. The RPL requirements of the *Standards for NVR Registered Training Organisations* must be met.

As with all assessment, the assessor must be confident that the evidence indicates that the candidate is currently competent against the endorsed unit of competency. This evidence may take a variety of forms and might include certification, references from past employers, testimonials from clients, and work samples. The onus is on candidates to provide sufficient evidence to satisfy assessors that they currently hold the relevant competencies. In judging evidence, the assessor must ensure that the evidence of prior learning is:

- authentic (the candidate's own work);
- valid (directly related to the current version of the relevant endorsed unit of competency);
- reliable (shows that the candidate consistently meets the endorsed unit of competency);
- current (reflects the candidate's current capacity to perform the aspect of the work covered by the endorsed unit of competency); and
- sufficient (covers the full range of elements in the relevant unit of competency and addresses the four dimensions of competency, namely task skills, task management skills, contingency management skills, and job/role environment skills).

The assessment only or recognition of prior learning pathway is likely to be most appropriate in the following scenarios:

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- candidates enrolling in qualifications who want recognition for prior learning or current competencies;
- existing workers;
- individuals with overseas qualifications;
- recent migrants with established work histories;
- people returning to the workplace; and
- people with disabilities or injuries requiring a change in career.

Combination of pathways

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

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

Assessor requirements

This section identifies the mandatory competencies for assessors, and clarifies how others may contribute to the assessment process where one person alone does not hold all the required competencies.

Assessor competencies

The *Standards for NVR Registered Training Organisations* specify mandatory competency requirements for assessors. For information, go to www.asqa.gov.au.

Reasonable adjustment

In accordance with the Disability Standards for Education (2005), reasonable adjustments are to be made to ensure equity in training and assessment of people with disabilities. This means that all 'education providers are under a positive obligation to make changes to reasonably accommodate the needs of a student with a disability'.

Adjustments are considered 'reasonable' if they do not impose an unjustifiable hardship on a training provider or employer. When assessing people with disabilities, assessors are encouraged to apply good practice assessment methods with sensitivity and flexibility. This should include:

- checking their initial assumptions about the capacity to include people with various disabilities
- seeking advice from people with experience and expertise in training, assessing and otherwise supporting people with disabilities.

Designing assessment tools

This section provides an overview on the use and development of assessment tools.

Use of assessment tools

Assessment tools provide a means of collecting the evidence that assessors use in making judgements about whether candidates have achieved competency.

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There is no set format or process for the design, production or development of assessment tools. Assessors may use prepared assessment tools, such as those specifically developed to support this Training Package, or they may develop their own.

Developing assessment tools

When developing their own assessment tools, assessors must ensure that the tools:

- are benchmarked against the relevant unit or units of competency;
- are reviewed as part of the validation of assessment strategies required under the Standards; and
- meet the assessment requirements expressed in the *Standards for NVR Registered Training Organisations.*

A key reference for assessors developing assessment tools is TAE10 Training and Education Training Package and the unit of competency *TAEASS502B Design and develop assessment tools.*

Conducting assessment

This section details the mandatory assessment requirements and provides information on equity in assessment including reasonable adjustment.

Mandatory assessment requirements

Assessments must meet the criteria set out in the *Standards for NVR Registered Training Organisations*.

For information, go to www.asqa.gov.au.

Assessment of employability skills

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

Employability skills are embedded and explicit within each unit of competency. Training providers must use employability skills information in order to design valid and reliable training and assessment strategies. This analysis could include:

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

For more information on employability skills in Construction and Property Services Industry Skills Council (CPSISC) Training Packages, go to the CPSISC website at www.cpsisc.com.au.

Access and equity

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An individual's access to the assessment process should not be adversely affected by restrictions placed on the location or context of assessment beyond the requirements specified in this Training Package: training and assessment must be bias-free.
Under the rules for their development, Training Packages must reflect and cater for the increasing diversity of Australia's VET clients and Australia's current and future workforce. The flexibilities offered by Training Packages should enhance opportunities and potential outcomes for all people so that we can all benefit from a wider national skills base and a shared contribution to Australia's economic development and social and cultural life.

Reasonable adjustments

It is important that education providers take meaningful, transparent and reasonable steps to consult, consider and implement reasonable adjustments for students with disability.
Under the *Disability Standards for Education 2005*, education providers must make reasonable adjustments for people with disability to the maximum extent that those adjustments do not cause that provider unjustifiable hardship. While 'reasonable adjustment' and 'unjustifiable hardship' are different concepts and involve different considerations, they both seek to strike a balance between the interests of education providers and the interests of students with and without disability.
An adjustment is any measure or action that a student requires because of their disability, and which has the effect of assisting the student to access and participate in education and training on the same basis as students without a disability. An adjustment is reasonable if it achieves this purpose while taking into account factors such as the nature of the student's disability, the views of the student, the potential effect of the adjustment on the student and others who might be affected, and the costs and benefits of making the adjustment.
An education provider is also entitled to maintain the academic integrity of a course or program and to consider the requirements or components that are inherent or essential to its nature when assessing whether an adjustment is reasonable. There may be more than one adjustment that is reasonable in a given set of circumstances; education providers are required to make adjustments that are reasonable and that do not cause them unjustifiable hardship.
See the Training Package Development Handbook (http://www.deewr.gov.au/Skills/Overview/Policy/TPDH/Pages/main.aspx) for more information on reasonable adjustment, including examples of adjustments.

Further sources of information

The section provides a listing of useful contacts and resources to assist assessors in planning, designing, conducting and reviewing of assessments against this Training Package.

Contacts

Construction and Property Services Industry Skills Council
PO Box 151
Belconnen ACT 2616
Telephone: 02 6253 0002
Fax: 02 6253 0004
Web: www.cpsisc.com.au
Email: info@cpsisc.com.au

Innovation and Business Skills Australia

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Level 11
176 Wellington Parade
East Melbourne VIC 3002
Telephone: 03 9815 7000
Fax: 03 9815 7001
Web: www.ibsa.org.au
Email: reception@ibsa.org.au

General resources

AQF Implementation Handbook, Australian Qualifications Framework, *www.aqf.edu.au*
Standards for NVR Registered Training Organisations, *www.asqa.gov.au*
Style Guide for Training Package Support Materials, Australian National Training Authority, Melbourne 2003 – can be downloaded from the ANTA page at *www.deewr.gov.au*
TAE10 Training and Education Training Package – this is available from Innovation and Business Skills Australia (IBSA) and can be viewed, and components downloaded, from Training.gov.au (TGA)
Training.gov.au, an electronic database providing comprehensive information about RTOs, Training Packages and accredited courses – *www.training.gov.au*

Assessment resources
Training Package Assessment Guides – a range of resources to assist RTOs in developing Training Package assessment materials developed by DEST with funding from the Department of Education, Training and Youth Affairs. It is made up of 10 separate titles, as described at the ANTA publications page of www.dest.gov.au. Go to **www.resourcegenerator.gov.au/loadpage.asp?TPAG.htm**

Assessment tool design and conducting assessment
VETASSESS & Western Australian Department of Training and Employment 2000, Designing Tests – Guidelines for designing knowledge based tests for Training Packages
Vocational Education and Assessment Centre 1997, Designing Workplace Assessment Tools, *A self-directed learning program*, NSW TAFE
Manufacturing Learning Australia 2000, *Assessment Solutions*, Australian Training Products, Melbourne
Rumsey, David 1994, *Assessment practical guide*, Australian Government Publishing Service, Canberra

Assessor training
Australian National Training Authority, *A Guide for Professional Development*, ANTA, Brisbane
Victorian TAFE Association 2000, *The professional development CD: A learning tool*, VTA, Melbourne

Assessment system design and management
Office of Training and Further Education 1998, Demonstrating best practice in VET project – assessment systems and processes, OTFE Victoria
Toop, L., Gibb, J. & Worsnop, P. *Assessment system designs*, Australian Government Publishing Service, Canberra

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Western Australia Department of Training and VETASSESS 1998, *Kit for Skills Recognition Organisations*, WADOT, Perth

Access and equity resources
For supporting resources, regularly check DEEWR publications (www.deewr.gov.au)

Legislation
Racial Discrimination Act 1975 http://scaleplus.law.gov.au/html/pasteact/0/47/top.htm
Disability Discrimination Act 1992 (DDA)
http://scaleplus.law.gov.au/html/pasteact/0/311/top.htm
Human Rights and Equal Opportunity Commission www.hreoc.gov.au
Working with Diversity – AQTF supporting resources
Working with Diversity: A Guide to Equity and the AQTF
Working with Diversity: Quality Training for People With a Disability
Working with Diversity: Quality Training for Indigenous Australians

Language and literacy
Adult literacy http://www.dest.gov.au/literacynet/

Indigenous
Partners in a Learning Culture: National Strategy and Blueprint for Implementation available from ANTA publications
Australian Indigenous Training Advisory Council (AITAC)
http://www.dest.gov.au/sectors/training_skills/policy_issues_reviews/key_issues/nts/vet/aitac.htm
Indigenous Education Consultative Bodies (IECB): contact State & Territory Training Authorities or Telephone 1800 800 821, or go to
http://www.dest.gov.au/sectors/indigenous_education/organisation_contacts

Disability
Australian Disability Training Advisory Council (ADTAC)
http://www.trainability.edu.au/ADTAChomepage.htm
Disability employment agencies: contact State and Territory offices of Department of Family and Community Services for details of local disability employment agencies – or go to
http://www.facs.gov.au/internet/facsinternet.nsf/disabilities/services-cdes.htm

Women
Equal Opportunity in the Workplace Agency (EOWA). www.eowa.gov.au

Competency Standards

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

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Competency covers all aspects of workplace performance and involves performing individual tasks; managing a range of different tasks; responding to contingencies or breakdowns; and, dealing with the responsibilities of the workplace, including working with others. Workplace competency requires the ability to apply relevant skills, knowledge and attitudes consistently over time and in the required workplace situations and environments. In line with this concept of competency Training Packages focus on what is expected of a competent individual in the workplace as an outcome of learning, rather than focussing on the learning process itself. Competency standards in Training Packages are determined by industry to meet identified industry skill needs. Competency standards are made up of a number of units of competency each of which describes a key function or role in a particular job function or occupation. Each unit of competency within a Training Package is linked to one or more AQF qualifications.

Contextualisation of units of competency by RTOs

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

Any contextualisation of units of competency in this Training Package must be within the bounds of the following advice:

- RTOs must not remove or add to the number and content of elements and performance criteria.
- RTOs can include specific industry terminology in the range statement.
- Any amendments and additions to the range statement made by RTOs must not diminish the breadth of application of the competency, or reduce its portability.
- RTOs may add detail to the evidence guide in areas such as the critical aspects of evidence or required resources and infrastructure—but only where these expand the breadth of the competency and do not limit its use.

Construction, plumbing and services units of competency reflect the occupational requirements for each industry sector. This includes specific aspects of, and advice for, assessment that are critical to determining competency achievement.

Use of common units across all sectors of the Training Package has been maximised, however some skills that may appear generic are considered by industry stakeholders to require sector specialisation accommodated in individual units of competency.

Components of units of competency

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

Unit title

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

Unit descriptor

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

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Employability skills
This sub-section contains a statement that the unit contains Employability skills.
Prerequisite units (optional)
If there are any units of competency that must be completed before the unit, these will be listed.
Application of the unit
This sub-section fleshes out the unit of competency's scope, purpose and operation in different contexts, for example, by showing how it applies in the workplace.
Competency field (optional)
The competency field either reflects the way the units of competency are categorised in the Training Package or denotes the industry sector, specialisation or function. It is an optional component of the unit of competency.
Sector (optional)
The industry sector is a further categorisation of the competency field and identifies the next classification, for example an elective or supervision field.
Elements of competency
The elements of competency are the basic building blocks of the unit of competency. They describe in terms of outcomes the significant functions and tasks that make up the competency.
Performance criteria
The performance criteria specify the required performance in relevant tasks, roles, skills and in the applied knowledge that enables competent performance. They are usually written in passive voice. Critical terms or phrases may be written in bold italics and then defined in range statement, in the order of their appearance in the performance criteria.
Required skills and knowledge
The essential skills and knowledge are either identified separately or combined. Knowledge identifies what a person needs to know to perform the work in an informed and effective manner. Skills describe the application of knowledge to situations where understanding is converted into a workplace outcome.
Range statement
The range statement provides a context for the unit of competency, describing essential operating conditions that may be present with training and assessment, depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts. As applicable, the meanings of key terms used in the performance criteria will also be explained in the range statement.
Evidence guide
The evidence guide is critical in assessment as it provides information to the registered training organisation (RTO) and assessor about how the described competency may be demonstrated. The evidence guide does this by providing a range of evidence for the assessor to make determinations, and by providing the assessment context. The evidence guide describes:

- conditions under which competency must be assessed including variables such as the assessment environment or necessary equipment;
- relationships with the assessment of any other units of competency;
- suitable methodologies for conducting assessment including the potential for workplace simulation;
- resource implications, for example access to particular equipment, infrastructure or situations;

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- how consistency in performance can be assessed over time, various contexts and with a range of evidence; and
- the required underpinning knowledge and skills

Employability skills in units of competency

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

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

Explicitly embedding employability skills in units of competency

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

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

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

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

Sample unit of competency components showing employability skills

The following table shows the sequence of a unit of competency, and each cell contains text taken from a range of units. It provides examples of where and how various employability skills could be embedded in each component.

Please note that in the example, the bracketed employability skills are provided for clarification only and would not be present in units of competency within this Training Package.

Unit Title	Give formal presentations and take part in meetings **(Communication)**
Unit Descriptor	This unit covers the skills and knowledge required to promote the use and implementation of innovative work practices to effect change. **(Initiative and enterprise)**
Element	Proactively resolve issues. (problem solving)

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Performance Criteria	Information is organised in a format suitable for analysis and dissemination in accordance with organisational requirements. **(Planning and organising)**
Range Statement	Software applications may include email, internet, word processing, spreadsheet, database or accounting packages. (technology) Modify activities depending on differing workplace contexts, risk situations and environments. **(Learning)**
Required Skills and Knowledge	Work collaboratively with others during a fire emergency. (teamwork) Instructions, procedures and other information relevant the maintenance of vessel and port security. **(Communication)**
Evidence Guide	Evidence of having worked constructively with a wide range of community groups and stakeholders to solve problems and adapt or design new solutions to meet identified needs in crime prevention. In particular, evidence must be obtained on the ability to: • assess response options to identified crime-prevention needs and determine the optimal action to be implemented • in consultation with relevant others, design an initiative to address identified issues. **(Initiative and enterprise).**

Employability Skills Summaries and units of competency

An Employability Skills Summary exists for each qualification. Summaries include broad advice on industry expectations with regard to employability skills at the qualification level. Summaries should be used by trainers and assessors to assist in identifying the employability skills requirements contained within units of competency.

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CPC10111 Certificate I in Construction

Modification History

Revised qualification deemed equivalent to CPC10111
Addition of CPCCCM1016A to elective pool
Core and elective units revised resulting in a number of unit identifier changes

Description

This qualification provides an introduction to the construction industry, its culture, occupations, job roles and workplace expectations. The units of competency cover essential work health and safety requirements, the industrial and work organisation structure, communication skills, work planning, and basic use of tools and materials. The qualification is built around a basic construction project unit that integrates the skills and embeds the facets of employability skills in context.

The qualification is suited to VET in Schools programs or learners with no previous connection to the construction industry or relevant employment history.

There are no specific job outcomes to this qualification, but the skills achieved will assist in successfully undertaking a Certificate II pre-vocational program or job outcome qualification, or will facilitate entry into an Australian Apprenticeship.

The unit CPCCOHS1001A Work safely in the construction industry is designed to meet OHS regulatory authority requirements for OHS induction and must be achieved before access to any building and construction work site.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context. A substantial period of work placement is recommended to ensure the unit outcomes are met.

Pathways Information

Not Applicable

Licensing/Regulatory Information

Not Applicable

Entry Requirements

Not Applicable

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:

Communication	• Communicates with clients, colleagues and others using effective and appropriate communication techniques, including:
	  • Clear and direct communication
	  • Active listening
	  • Verbal and non-verbal language
	  • Questioning to identify and confirm requirements
	  • Language and concepts appropriate to cultural differences
	• Follows instructions from supervisor and other relevant others
	• Understands, interprets and applies information as required from:
	  • Environmental and OHS requirements
	  • Codes and standards
	  • Plans and drawings
	  • Specifications
	  • Safety signs and symbols
	  • Organisational policies and procedures
	  • Designs
	• Understands relevant definitions, terminology, symbols, abbreviations and language
	• Records relevant information using standard workplace documentation
	• Applies measurements and calculations using appropriate equipment, formulas and records as required
	• Reports and records hazards and risks

Teamwork	• Works as part of a team to prioritise and action tasks • Provides assistance and encouragement to other team members • Initiates and encourages improvements in team performance • Identifies and utilises the strengths of other team members • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities • Participates in on-site meetings

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Employability skill	Industry/enterprise requirements for this qualification include:
Problem solving	• Examines tools and equipment prior to use for damage, missing components or other defects • Identifies typical faults and problems and takes necessary remedial action • Rectifies simple faults with tools and equipment
Initiative and enterprise	• Identifies opportunities to improve resource efficiency and makes suggestions as appropriate • Responds to change and workplace challenges • Puts ideas into action • Maximises use of resources by recycling, re-using or using appropriate disposal methods
Planning and organising	• Identifies hazards and implements appropriate hazard control measures • Selects and uses appropriate materials, tools and equipment • Identifies requirements, applies relevant resources and sequences tasks using time management techniques
Self management	• Completes daily work activities • Identifies own roles and responsibilities • Contributes to workplace responsibilities, such as current work site environmental/sustainability frameworks or management systems • Manages own performance to meet workplace standards • Seeks support to improve work performance • Cleans up work area
Learning	• Identifies own learning needs and seeks skill development as required • Is open to learning new ideas and techniques
Technology	• Uses calculators • Uses computers and relevant software • Uses and operates a range of tools and equipment correctly and safely

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Employability skill	Industry/enterprise requirements for this qualification include:

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 11 units of competency:
  - 8 core units
  - 3 elective units.

The elective units are to be chosen as follows:

- up to 3 units from the elective units below
- 1 unit from Certificate I or II qualifications in CPC08 or another current Training Package or state accredited course, provided the integrity of the AQF alignment is ensured, and they contribute to a valid, industry-supported vocational outcome.

Some units in this qualification have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

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CPCCCM1012A	Work effectively and sustainably in the construction industry
CPCCCM1013A	Plan and organise work
CPCCCM1014A	Conduct workplace communication
CPCCCM2001A	Read and interpret plans and specifications
CPCCCM2005B	Use construction tools and equipment
CPCCOHS1001A	Work safely in the construction industry
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry
CPCCVE1011A	Undertake a basic construction project

Elective units

CPCCCM1011A	Undertake basic estimation and costing
CPCCCM1015A	Carry out measurements and calculations
CPCCCM1016A	Identify requirements for safe tilt-up work
CPCCCM2004A	Handle construction materials
CPCCCM2006B	Apply basic levelling procedures
CPCCVE1002B	Undertake a basic computer design project

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CPC20112 Certificate II in Construction

Modification History

Revised qualification deemed not equivalent to CPC20111
Qualification packaging amended:

- same total number of units, but core units required increased by one and elective units reduced with the move of CPCCCM2010B from elective to core
- change in options regarding choice of elective units
- elective unit grouping changed resulting in deletion of some elective units

Core and elective units revised resulting in a number of unit identifier changes

Description

This qualification provides an occupational outcome and a range of support tasks applicable to a majority of construction work sites.

Occupational titles may include:

- builder's labourer.

The qualification has core units of competency that are required in many Certificate III qualifications. The elective options are structured to allow choice from a range of units aligned at Certificate III level and in total could provide meaningful credit in a construction industry Australian Apprenticeship.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

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Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:

Communication	• Communicates with clients, colleagues and others using effective and appropriate communication techniques, including:
	  • Clear and direct communication
	  • Active listening
	  • Verbal and non-verbal language
	  • Questioning to identify and confirm requirements
	  • Language and concepts appropriate to cultural differences
	• Follows instructions from supervisor and other relevant persons
	• Understands, interprets and applies information as required from:
	  • Environmental and OHS requirements, including material safety data sheets (MSDS)
	  • Plans, drawings and specifications
	  • Design concepts
	  • Load tables
	  • Safety signs and symbols
	  • Organisational policies and procedures
	• Understands relevant definitions, terminology, symbols, abbreviations and language
	• Records relevant information using standard workplace documentation, including log and hoist books
	• Applies measurements and calculations using appropriate equipment, formulas and records as required
	• Reports and records hazards and risks

Teamwork	• Works as part of a team • Provides assistance and encouragement to other team members • Initiates and encourages improvements in team performance • Identifies and uses the strengths of other team members • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities • Participates in on-site meetings

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Employability skill	Industry/enterprise requirements for this qualification include:
Problem-solving	• Examines tools and equipment prior to use for damage, missing components or other defects • Identifies typical faults and problems and takes remedial action and/or reports to supervisor • Rectifies simple faults with tools and equipment • Conducts daily safety check for hoist, including test run • Identifies methods of prevention and control for water penetration
Initiative and enterprise	• Identifies opportunities to improve resource efficiency and makes suggestions as appropriate • Responds to change and workplace challenges • Puts ideas into action • Maximises use of resources by recycling, re-using or using appropriate disposal methods
Planning and organising	• Identifies hazards and implements appropriate hazard control measures • Identifies and manages risks • Carries out site inspection to identify requirements • Selects and uses appropriate materials, tools and equipment • Determines material quantity requirements and checks for conformity to requirements • Prioritises and sequences tasks • Applies time management skills to ensure work is completed to time requirements
Self-management	• Evaluates own actions and makes judgements about performance and necessary improvements • Contributes to workplace responsibilities, such as current work site environmental/sustainability frameworks or management systems • Manages own performance to meet workplace standards • Seeks support to improve work performance • Cleans up work area, including tools and equipment

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Employability skill	Industry/enterprise requirements for this qualification include:
Learning	• Identifies own learning needs and seeks skill development as required • Is open to learning new ideas and techniques
Technology	• Uses calculators • Uses and operates a range of tools and equipment correctly and safely • Properly starts up, operates and shuts down equipment • Carries out pre- and post-operational checks on equipment and machines • Performs tool and equipment maintenance as required

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 15 units of competency:
  - 10 core units
  - 5 elective units.

The elective units are to be chosen as follows:

- up to 5 units from the elective units below
- one unit may be chosen from Certificate I, II or III qualifications in CPC08 or another current Training Package or accredited course, provided the integrity of the AQF alignment is ensured, and they contribute to a valid, industry-supported vocational outcome.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units of competency

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Unit code	Unit title
CPCCCM1012A	Work effectively and sustainably in the construction industry
CPCCCM1013A	Plan and organise work
CPCCCM1014A	Conduct workplace communication
CPCCCM1015A	Carry out measurements and calculations
CPCCCM2001A	Read and interpret plans and specifications
CPCCCM2005B	Use construction tools and equipment
CPCCCM2006B	Apply basic levelling procedures
CPCCCM2010B	Work safely at heights
CPCCCO2013A	Carry out concreting to simple forms
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Elective units of competency

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Unit code	Unit title
CPCCCM2002A	Carry out excavation
CPCCCM2007B	Use explosive power tools
CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCCCM2009A	Carry out basic demolition
CPCCRI3001A	Operate personnel and materials hoists
CPCCSF2004A	Place and fix reinforcement materials
RIICCM210A	Install trench support
RIIOHS202A	Enter and work in confined spaces
RIIOHS205A	Control traffic with stop-slow bat
RIIWMG203A	Drain and dewater civil construction site
TLILIC2001A	Licence to operate a forklift truck

Custom Content Section

Not applicable.

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CPC20211 Certificate II in Construction Pathways

Modification History

Revised qualification deemed equivalent to CPC20211

- minor editorial changes to clarify elective packaging rules, without changing intent
- elective units updated:
  - CPCCJN2002A to current equivalent version (CPCCJN2002B Prepare for off-site manufacturing process)
  - CPCCST2002A to current non-equivalent version (CPCCST2006A Identify and use stone products)

Description

This qualification provides a pathway to the primary trades in the construction industry with the exception of plumbing. Trade outcomes are predominantly achieved through an Australian Apprenticeship and this Certificate II allows for inclusion of skills suited for entry to off-site occupations, such as joinery and shopfitting as well as carpentry, bricklaying and other occupations in general construction.

This Certificate II is designed to introduce learners to the recognised trade callings in the construction industry and provide meaningful credit in a construction industry Australian Apprenticeship.

The qualification has core unit of competency requirements that are required in most Certificate III qualifications. The elective options are structured to allow choice from areas of trade skills as an introduction to a range of occupations.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

Not Applicable

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Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not Applicable

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:

Communication	• Communicates with clients, colleagues and others using effective and appropriate communication techniques, including:
	  • Clear and direct communication
	  • Active listening
	  • Verbal and non-verbal language
	  • Questioning to identify and confirm requirements
	  • Language and concepts appropriate to cultural differences
	• Follows instructions from supervisor and other relevant persons
	• Understands, interprets and applies information as required from:
	  • Environmental and work health and safety (WHS) requirements, including safety data sheets (SDS)
	  • Plans, drawings and specifications
	  • Schedules
	  • Industry-specific resources, such as Moh's scale
	  • Load tables
	  • Safety signs and symbols
	  • Organisational policies and procedures
	• Understands relevant definitions, terminology, symbols, abbreviations and language
	• Records relevant information using standard workplace documentation
	• Applies measurements and calculations using appropriate equipment, formulas and records as required
	• Reports and records hazards and risks

Teamwork	• Works as part of a team • Provides assistance and encouragement to other team members • Initiates and encourages improvements in team performance • Identifies and uses the strengths of other team members • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities • Participates in on-site meetings
Problem solving	• Examines tools and equipment prior to use for damage, missing components or other defects

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Employability skill	Industry/enterprise requirements for this qualification include:
	• Identifies typical faults and problems and takes remedial action and/or reports to supervisor • Rectifies simple faults with tools and equipment • Identifies methods of prevention and control for water penetration
Initiative and enterprise	• Identifies opportunities to improve resource efficiency and makes suggestions as appropriate • Responds to change and workplace challenges • Puts ideas into action • Maximises use of resources by recycling, re-using or using appropriate disposal methods
Planning and organising	• Identifies hazards and implements appropriate hazard control measures • Selects and uses appropriate materials, tools and equipment • Determines material quantity requirements and checks for conformity to requirements • Prioritises and sequences tasks • Applies time management skills to ensure work is completed to time requirements
Self management	• Evaluates own actions and makes judgements about performance and necessary improvements • Contributes to workplace responsibilities, such as current work site environmental/sustainability frameworks or management systems • Manages own performance to meet workplace standards • Seeks support to improve work performance • Cleans up work area, including tools and equipment
Learning	• Identifies own learning needs and seeks skill development as required • Is open to learning new ideas and techniques
Technology	• Uses calculators • Uses and operates a range of tools and equipment correctly and safely • Properly starts up, operates and shuts down equipment

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Employability skill	**Industry/enterprise requirements for this qualification include:** • Carries out pre- and post-operational checks on equipment and machines • Performs tool and equipment maintenance as required

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

12 units of competency:

- 6 core units
- 6 elective units.

The elective units are to be chosen as follows:

- no less than 4 units and up to 6 units from Groups A to G, with no less than 2 units from any individual group
- up to 2 units from Group H
- 1 unit may be chosen from Certificate I or II qualifications in CPC08 or another current Training Package or accredited course, provided the integrity of the AQF alignment is ensured, and they contribute to a valid, industry-supported vocational outcome.

The wide range of electives is drawn from Certificate III units of competency in CPC08 Construction, Plumbing and Services Training Package. Units of competency from Plumbing and Services qualifications are not available, as there are different plumbing and services pathways to Certificate III outcomes.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

CPCCCM1012A	Work effectively and sustainably in the construction industry
CPCCCM1013A	Plan and organise work
CPCCCM1014A	Conduct workplace communication
CPCCCM1015A	Carry out measurements and calculations
CPCCCM2001A	Read and interpret plans and specifications

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CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Elective units

Group A: Brick and blocklaying

CPCCBL2001A	Handle and prepare bricklaying and blocklaying materials
CPCCBL2002A	Use bricklaying and blocklaying tools and equipment

Group B: Carpentry

CPCCCA2002B	Use carpentry tools and equipment
CPCCCA2003A	Erect and dismantle formwork for footings and slabs on ground
CPCCCA2011A	Handle carpentry materials

Group C: Solid plastering

CPCCSP2001A	Handle solid plastering materials
CPCCSP2002A	Use solid plastering tools and equipment
CPCCSP2003A	Prepare surfaces for plastering

Group D: Wall and floor tiling

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CPCCWF2001A	Handle wall and floor tiling materials
CPCCWF2002A	Use wall and floor tiling tools and equipment
CPCCWF3001A	Prepare surfaces for tiling application

Group E: Waterproofing

CPCCWP2001A	Handle waterproofing materials
CPCCWP2002A	Use waterproofing tools and equipment
CPCCWP2003A	Prepare for construction waterproofing process
CPCCWP2004A	Prepare surfaces for waterproofing application

Group F: Joinery and shopfitting

CPCCJN2001A	Assemble components
CPCCJN2002B	Prepare for off-site manufacturing process
CPCCSH2001A	Prepare surfaces

Group G: Stonemasonry

CPCCST2001A	Prepare for stonemasonry construction process
CPCCST2003A	Finish stone
CPCCST2006A	Identify and use stone products

Group H: General elective units

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CPCCCM2004A	Handle construction materials
CPCCCM2006B	Apply basic levelling procedures
CPCCCM2009A	Carry out basic demolition
CPCCCM2010B	Work safely at heights
CPCCCO2013A	Carry out concreting to simple forms
CPCCJN3001A	Use static machines
RIICCM210A	Install trench support
RIIOHS205A	Control traffic with stop-slow bat
RIIWMG203A	Drain and dewater civil construction site

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CPC20712 Certificate II in Drainage

Modification History

Revised qualification deemed not equivalent to CPC20711
Qualification packaging amended - same number of core and elective units required, but changed core units:

- CPCPCM2050A moved from core to elective
- CPCPDR3021A moved from elective to core
- native CPC08 first aid unit (CPCPCM2011A) replaced with imported HLT07 unit (HLTFA211A)

A number of core and elective units replaced with updated versions

Description

This qualification provides an occupational outcome in draining.

Occupational titles may include:

- Drainer.

The qualification has core and elective units of competency that include units common to other qualifications in the plumbing industry, as well as specialist drainage units of competency.

The plumbing industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

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Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:

Communication	• Communicates with clients, colleagues and others using effective and appropriate communication techniques, including:
	  • Clear and direct communication
	  • Active listening
	  • Verbal and non-verbal language
	  • Questioning to identify and confirm requirements
	  • Language and concepts appropriate to cultural differences
	• Follows instructions from supervisor and other relevant persons
	• Understands, interprets and applies information as required from:
	  • Regulatory, legislative, licensing and organisational requirements
	  • Environmental and OHS requirements, including material safety data sheets (MSDS)
	  • Codes and standards
	  • Plans, drawings and specifications
	  • Schedules
	  • Safety signs and symbols
	  • Organisational policies and procedures
	• Understands relevant definitions, terminology, symbols, abbreviations and language
	• Uses industry-accepted visual communications, including hand signals
	• Reports and records routine workplace and regulatory information
	• Applies measurements and calculations using appropriate equipment, formulas and records as required
	• Reports and records hazards and risks

Teamwork	• Works as part of a team • Provides assistance and encouragement to other team members • Initiates and encourages improvements in team performance • Works with others to plan and sequence tasks • Identifies and utilises the strengths of other team members • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities • Participates in workplace meetings
Problem solving	• Responds effectively to hazards, risks, emergencies and first aid situations

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Employability skill	Industry/enterprise requirements for this qualification include:
	• Examines tools and equipment prior to use for damage, missing components or other defects • Identifies typical faults and problems and takes remedial actions and/or reports to supervisor • Rectifies simple faults with tools and equipment • Locates and clears plumbing blockages
Initiative and enterprise	• Maximises use of resources by recycling, re-using or using appropriate disposal methods • Responds to change and workplace challenges
Planning and organising	• Prepares work area • Identifies and obtains necessary documentation • Collects, analyses and organises workplace information • Selects and uses appropriate materials, tools and equipment • Carries out site inspections • Determines material quantity requirements and conformity to requirements • Determines roof water storage requirements • Plans drainage system layouts • Prioritises and sequences tasks • Applies time management skills to ensure work is completed to time requirements
Self management	• Recognises obligations and accepts responsibility for own work and safety • Recognises quality requirements and completes work to expected standard • Identifies personal career development needs and sets own and team work goals • Participates in workplace induction • Cleans up work area, including tools and equipment • Seeks support to improve work performance
Learning	• Identifies own learning needs and seeks skill development as required • Is open to learning new ideas and techniques • Participates in workplace induction

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Employability skill	Industry/enterprise requirements for this qualification include:
Technology	• Installs, tests and maintains systems • Uses electricity and electrical equipment safely • Uses and operates a range of tools and equipment correctly and safely • Identifies technological trends that may affect the plumbing and services sector • Carries out pre- and post-operational checks on tools and equipment • Performs tool and equipment maintenance as required

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 22 units of competency:
  - 18 core units
  - 4 elective units.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

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CPCPCM2039A	Carry out interactive workplace communication
CPCPCM2040A	Read plans and calculate plumbing quantities
CPCPCM2041A	Work effectively in the plumbing and services sector
CPCPCM2043A	Carry out WHS requirements
CPCPCM2045A	Handle and store plumbing materials
CPCPCM2046A	Use plumbing hand and power tools
CPCPCM2047A	Carry out levelling
CPCPCM2054A	Carry out simple concreting and rendering
CPCPDR2021A	Locate and clear blockages
CPCPDR2022A	Install domestic treatment plants
CPCPDR2024A	Install stormwater and sub-soil drainage systems
CPCPDR2025A	Drain work site
CPCPDR2026A	Install prefabricated inspection openings and enclosures
CPCPDR3021A	Plan layout of a residential sanitary drainage system
CPCPDR3022A	Install below ground sanitary drainage systems
CPCPDR3023A	Install on-site disposal systems
HLTFA211A	Provide basic emergency life support
RIICCM210A	Install trench support

Elective units

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CPCPCM2048A	Cut and join sheet metal
CPCPCM2049A	Cut using oxy-LPG-acetylene equipment
CPCPCM2050A	Mark out materials
CPCPCM2052A	Weld using oxy-acetylene equipment
CPCPCM2053A	Weld using manual metal arc welding equipment
CPCPCM3022A	Weld polyethylene and polypropylene pipes using fusion method
CPCPDR2023A	Maintain effluent disinfection systems
CPCPRF2023A	Collect and store roof water
CPCPSN3025A	Install pre-treatment facilities
CPCPWT3029A	Install water pipe systems

Custom Content Section

Not applicable.

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CPC20812 Certificate II in Metal Roofing and Cladding

Modification History

Revised qualification deemed not equivalent to CPC20811
A number of core and elective units replaced with updated versions
Change to core units:

- native CPC08 first aid unit (CPCPCM2011A) replaced with imported HLT07 unit (HLTFA211A)
-

Description

This qualification provides an occupational outcome in metal roofing and cladding.

Occupational titles may include:

- Roofer.

The qualification has core and elective units of competency that include units common to other qualifications in the plumbing industry, as well as specialist metal roofing and cladding units of competency.

The plumbing industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:

Communication	• Communicates with clients, colleagues and others using effective and appropriate communication techniques, including:
	  • Clear and direct communication
	  • Active listening
	  • Verbal and non-verbal language
	  • Questioning to identify and confirm requirements
	  • Language and concepts appropriate to cultural differences
	• Follows instructions from supervisor and other relevant persons
	• Understands, interprets and applies information as required from:
	  • Regulatory, legislative, licensing and organisational requirements
	  • Environmental and OHS requirements, including material safety data sheets (MSDS)
	  • Codes and standards
	  • Plans, drawings and specifications
	  • Schedules
	  • Load tables
	  • Designs
	  • Safety signs and symbols
	  • Organisational policies and procedures
	• Understands relevant definitions, terminology, symbols, abbreviations and language
	• Uses industry-accepted visual communications, including hand signals
	• Reports and records routine workplace and regulatory information
	• Applies measurements and calculations using appropriate equipment, formulas and records as required
	• Reports and records hazards and risks
	  • Produce drawings and sketches

Teamwork	• Works as part of a team • Provides assistance and encouragement to other team members • Initiates and encourages improvements in team performance • Works with others to plan and sequence tasks • Identifies and utilises the strengths of other team members • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities • Participates in workplace meetings

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Employability skill	Industry/enterprise requirements for this qualification include:
Problem solving	• Responds effectively to hazards, risks, emergencies and first aid situations • Examines tools and equipment prior to use for damage, missing components or other defects • Identifies typical faults and problems and takes remedial actions and/or reports to supervisor • Rectifies simple faults with tools and equipment • Rectifies incorrect roofing installations • Assesses roof work site safety
Initiative and enterprise	• Maximises use of resources by recycling, re-using or using appropriate disposal methods • Responds to change and workplace challenges • Designs and fabricates roof coverings
Planning and organising	• Prepares work area • Identifies and obtains necessary documentation • Collects, analyses and organises workplace information • Selects and uses appropriate materials, tools and equipment • Carries out site inspections • Determines material quantity requirements and conformity to requirements • Coordinates delivery of materials • Determines installation requirements • Fabricates, sets outs, installs and tests as required metal roofing and cladding components and systems • Prioritises and sequences tasks • Applies time management skills to ensure work is completed to time requirements
Self management	• Recognises obligations and accepts responsibility for own work and safety • Recognises quality requirements and completes work to expected standard • Identifies personal career development needs and sets own and team work goals • Participates in workplace induction • Cleans up work area, including tools and equipment

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Employability skill	Industry/enterprise requirements for this qualification include:
	• Seeks support to improve work performance
Learning	• Identifies own learning needs and seeks skill development as required • Is open to learning new ideas and techniques • Participates in workplace induction
Technology	• Uses electricity and electrical equipment safely • Uses and operates a range of tools and equipment correctly and safely • Properly starts up, operates and shuts down equipment • Identifies technological trends that may affect the plumbing and services sector • Carries out pre- and post-operational checks on tools and equipment • Performs tool and equipment maintenance as required

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 24 units of competency:
  - 15 core units
  - 9 elective units.

The elective units are to be chosen as follows:

- up to 9 units from general elective units
- up to 4 units from Certificate II qualifications in CPC08 or another current Training Package or state accredited course, provided the integrity of the AQF alignment is ensured, and that they contribute to a valid, industry-supported vocational outcome.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

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Core units

CPCCCM2010B	Work safely at heights
CPCCCM3001C	Operate elevated work platforms
CPCPCM2039A	Carry out interactive workplace communication
CPCPCM2040A	Read plans and calculate plumbing quantities
CPCPCM2041A	Work effectively in the plumbing and services sector
CPCPCM2043A	Carry out WHS requirements
CPCPCM2045A	Handle and store plumbing materials
CPCPCM2046A	Use plumbing hand and power tools
CPCPCM2047A	Carry out levelling
CPCPCM2048A	Cut and join sheet metal
CPCPCM2050A	Mark out materials
CPCPCM2055A	Work safely on roofs
CPCPRF2022A	Select and install roof sheeting and wall cladding
CPCPCM3021A	Flash penetrations through roofs and walls
HLTFA211A	Provide basic emergency life support

Elective units

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CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCCPB3015A	Install acoustic and thermal environmental protection systems
CPCCST2005A	Carry out load slinging of off-site materials
CPCPCM2049A	Cut using oxy-LPG-acetylene equipment
CPCPCM2052A	Weld using oxy-acetylene equipment
CPCPCM2053A	Weld using manual metal arc welding equipment
CPCPCM3022A	Weld polyethylene and polypropylene pipes using fusion method
CPCPDR2021A	Locate and clear blockages
CPCPRF2023A	Collect and store roof water
CPCPRF2024A	Fabricate roof coverings for curved structures
CPCPRF3021A	Receive roofing materials
CPCPRF3022A	Fabricate and install roof drainage components
CPCPRF3023A	Fabricate and install external flashings
CPCPRF3024A	Install roof components
CPCPRF3025A	Install roof coverings to curved roof structures
CPCPRF3026A	Install composite roof systems
CPPFES2006A	Prepare for installation and servicing operations
MEM05049B	Perform routine gas tungsten arc welding
MEM05050B	Perform routine gas metal arc welding

Custom Content Section

Not applicable.

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CPC20912 Certificate II in Urban Irrigation

Modification History

Revised qualification deemed not equivalent to CPC20911
Guidance included in the packaging rules regarding options in choice of electives
A number of core and elective units replaced with updated versions
Change to core units:

- native CPC08 first aid unit (CPCPCM2011A) replaced with imported HLT07 unit (HLTFA211A)
-

Description

This qualification provides an occupational outcome in urban irrigation.

Occupational titles may include:

- Irrigation technician.

The qualification has core and elective units of competency that include units common to other qualifications in the plumbing industry, as well as specialist urban irrigation units of competency.

The plumbing industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:

Communication	• Communicates with clients, colleagues and others using effective and appropriate communication techniques, including:
	  • Clear and direct communication
	  • Active listening
	  • Verbal and non-verbal language
	  • Questioning to identify and confirm requirements
	  • Language and concepts appropriate to cultural differences
	• Follows instructions from supervisor and other relevant persons
	• Understands, interprets and applies information as required from:
	  • Regulatory, legislative, licensing and organisational requirements
	  • Environmental and OHS requirements, including material safety data sheets (MSDS)
	  • Codes and standards
	  • Plans, drawings and specifications
	  • Schedules
	  • Safety signs and symbols
	  • Organisational policies and procedures
	• Understands relevant definitions, terminology, symbols, abbreviations and language
	• Uses industry-accepted visual communications, including hand signals
	• Reports and records routine workplace and regulatory information
	• Applies measurements and calculations using appropriate equipment, formulas and records as required
	• Reports and records hazards and risks
	• Produces designs, drawings and sketches

Teamwork	• Works as part of a team • Provides assistance and encouragement to other team members • Initiates and encourages improvements in team performance

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Employability skill	Industry/enterprise requirements for this qualification include:
	• Works with others to plan and sequence tasks • Identifies and utilises the strengths of other team members • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities • Participates in workplace meetings
Problem solving	• Responds effectively to hazards, risks, emergencies and first aid situations • Examines tools and equipment prior to use for damage, missing components or other defects • Identifies typical faults and problems and takes remedial actions and/or reports to supervisor • Rectifies simple faults with tools and equipment • Calculates water flow rates
Initiative and enterprise	• Maximises use of resources by recycling, re-using or using appropriate disposal methods • Responds to change and workplace challenges • Designs domestic irrigation systems
Planning and organising	• Prepares work area • Identifies and obtains necessary documentation • Collects, analyses and organises workplace information • Selects and uses appropriate materials, tools and equipment • Carries out site inspections • Determines material quantity requirements and conformity to requirements • Determines installation requirements • Installs, commissions and tests as required systems and pumps • Determines roof water storage requirements • Prioritises and sequences tasks • Applies time management skills to ensure work is completed to time requirements
Self management	• Recognises obligations and accepts responsibility for own work and safety • Recognises quality requirements and completes work to expected standard • Identifies personal career development needs and sets own

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Employability skill	Industry/enterprise requirements for this qualification include:
	and team work goals • Participates in workplace induction • Cleans up work area, including tools and equipment • Seeks support to improve work performance
Learning	• Identifies own learning needs and seeks skill development as required • Is open to learning new ideas and techniques • Participates in workplace induction
Technology	• Uses electricity and electrical equipment safely • Uses and operates a range of tools and equipment correctly and safely • Identifies technological trends that may affect the plumbing and services sector • Carries out pre- and post-operational checks on tools and equipment • Performs tool and equipment maintenance as required

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 20 units of competency:
  - 13 core units
  - 7 elective units.

The elective units must ensure the integrity of the AQF alignment and contribute to a valid, industry-supported vocational outcome and are to be chosen as follows:

- 7 units from the elective units listed below
- 2 of the units may be chosen from other Certificate II or III qualifications in CPC08 or another current Training Package or accredited course.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with

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prerequisite unit requirements available in this Training Package for this purpose.

Core units

CPCPCM2039A	Carry out interactive workplace communication
CPCPCM2040A	Read plans and calculate plumbing quantities
CPCPCM2041A	Work effectively in the plumbing and services sector
CPCPCM2043A	Carry out WHS requirements
CPCPCM2045A	Handle and store plumbing materials
CPCPCM2046A	Use plumbing hand and power tools
CPCPCM2050A	Mark out materials
CPCPCM2054A	Carry out simple concreting and rendering
CPCPFS2021A	Connect static storage tanks for fixed fire protection systems
CPCPIG2021A	Design domestic urban irrigation systems
CPCPIG3021A	Set out, install and commission irrigation systems
CPCPIG3022A	Install and commission domestic irrigation pumps
HLTFA211A	Provide basic emergency life support

Elective units

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CPCCST2005A	Carry out load slinging of off-site materials
CPCPCM2047A	Carry out levelling
CPCPCM2048A	Cut and join sheet metal
CPCPCM2049A	Cut using oxy-LPG-acetylene equipment
CPCPCM2052A	Weld using oxy-acetylene equipment
CPCPCM2053A	Weld using manual metal arc welding equipment
CPCPCM3022A	Weld polyethylene and polypropylene pipes using fusion method
CPCPRF2023A	Collect and store roof water
CPCPWT3025A	Install water pumpsets
CPCPWT3027A	Connect irrigation systems from drinking water supply
CPCPWT3028A	Install water services
CPCPWT3029A	Install water pipe systems
RIICCM210A	Install trench support

Custom Content Section

Not applicable.

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CPC30111 Certificate III in Bricklaying/Blocklaying

Modification History

Revised qualification deemed equivalent to CPC30111
Core and elective units revised resulting in a number of unit identifier changes

Description

This qualification provides a trade outcome in bricklaying and blocklaying.

Occupational titles may include:

- Bricklayer
- Blocklayer.

The qualification has core unit of competency requirements that cover common skills for the construction industry, as well as two specialist fields of work.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

Not Applicable

Licensing/Regulatory Information

Not Applicable

Entry Requirements

Not Applicable

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:

Communication	• Communicates with clients, colleagues and others using effective and appropriate communication techniques, including:
	  • Clear and direct communication
	  • Active listening
	  • Verbal and non-verbal language
	  • Questioning to identify and confirm requirements
	  • Language and concepts appropriate to cultural differences
	• Follows instructions from supervisor and other relevant persons
	• Understands, interprets and applies information as required from:
	  • Regulatory, legislative, licensing and organisational requirements
	  • Environmental and OHS requirements, including material safety data sheets (MSDS)
	  • Codes and standards
	  • Plans, drawings and specifications
	  • Schedules
	  • Safety signs and symbols
	  • Organisational policies and procedures
	• Understands relevant definitions, terminology, symbols, abbreviations and language
	• Records relevant information using standard workplace documentation
	• Applies measurements and calculations using appropriate equipment, formulas and records as required
	• Reports and records hazards and risks

Teamwork	• Works as part of a team • Provides assistance and encouragement to other team members • Initiates and encourages improvements in team performance • Identifies and utilises the strengths of other team members • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities • Coordinates and actions tasks • Participates in on-site meetings

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Employability skill	Industry/enterprise requirements for this qualification include:
Problem solving	• Examines tools and equipment prior to use for damage, missing components or other defects • Identifies typical faults and problems and takes remedial action and/or reports to supervisor • Rectifies simple faults with tools and equipment
Initiative and enterprise	• Identifies opportunities to improve resource efficiency and makes suggestions as appropriate • Responds to change and workplace challenges • Puts ideas into action • Maximises use of resources by recycling, re-using or using appropriate disposal methods
Planning and organising	• Identifies hazards and implements appropriate hazard control measures • Identifies and manages risks • Selects and uses appropriate materials, tools and equipment • Carries out inspections and checks • Determines material quantity requirements and conformity to requirements • Prioritises and sequences tasks • Applies time management skills to ensure work is completed to time requirements
Self management	• Evaluates own actions and makes judgements about performance and necessary improvements • Contributes to workplace responsibilities, such as current work site environmental/sustainability frameworks or management systems • Manages own performance to meet workplace standards • Seeks support to improve work performance • Cleans up work area, including tools and equipment
Learning	• Identifies own learning needs and seeks skill development as required • Is open to learning new ideas and techniques
Technology	• Uses calculators

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Employability skill	Industry/enterprise requirements for this qualification include:
	• Uses and operates a range of tools and equipment correctly and safely • Properly starts up, operates and shuts down equipment • Carries out pre- and post-operational checks on equipment and machines • Performs tool and equipment maintenance as required

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 27 units of competency:
  - 21 core units
  - 6 elective units.

The elective units are to be chosen as follows:

- from Groups A and B
- up to 2 units from Certificate III or IV qualifications in CPC08 or another current Training Package, provided the integrity of the AQF alignment is ensured, and they contribute to a valid, industry-supported vocational outcome.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

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CPCCCA3002A	Carry out setting out
CPCCCM1012A	Work effectively and sustainably in the construction industry
CPCCCM1013A	Plan and organise work
CPCCCM1014A	Conduct workplace communication
CPCCCM1015A	Carry out measurements and calculations
CPCCCM2001A	Read and interpret plans and specifications
CPCCCM2006B	Apply basic levelling procedures
CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCCCM2009A	Carry out basic demolition
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Brick and blocklaying field of work

CPCCBL2001A	Handle and prepare bricklaying and blocklaying materials
CPCCBL2002A	Use bricklaying and blocklaying tools and equipment
CPCCBL3002A	Carry out masonry veneer construction
CPCCBL3003A	Carry out cavity brick construction
CPCCBL3004A	Construct masonry steps and stairs
CPCCBL3005A	Lay masonry walls and corners
CPCCBL3006A	Lay multi-thickness walls and piers
CPCCBL3009A	Install flashings and damp proof course
CPCCBL3010A	Construct masonry arches
CPCCBL3011A	Construct curved walls
CPCCBL3014A	Install fire-rated masonry construction

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Elective units

Group A: Advanced brick and blocklaying

CPCCBL3001A	Lay paving
CPCCBL3007A	Install glass blockwork
CPCCBL3012A	Construct fireplaces and chimneys
CPCCBL3013A	Construct masonry structural systems
CPCCBL3015A	Construct decorative brickwork
CPCCBL3016A	Construct battered masonry walls and piers
CPCCBL3017A	Carry out tuck pointing to brickwork
CPCCBL3018A	Install aerated autoclaved concrete products

Group B: General elective units

CPCCCM2007B	Use explosive power tools
CPCCCM2010B	Work safely at heights
CPCCCM3001C	Operate elevated work platforms
CPCCCO2013A	Carry out concreting to simple forms
CPCCSF2004A	Place and fix reinforcement materials
BSBSMB301A	Investigate micro business opportunities
BSBSMB406A	Manage small business finances

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CPC30211 Certificate III in Carpentry

Modification History

Revised qualification deemed equivalent to CPC30211
Core and elective units revised resulting in a number of unit identifier changes

Description

This qualification provides a trade outcome in carpentry, covering work in residential and commercial applications.

Occupational titles may include:

- Carpenter
- Carpenter and joiner.

The qualification has core unit of competency requirements that cover common skills for the construction industry, as well as a specialist field of work.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:

Communication	• Communicates with clients, colleagues and others using effective and appropriate communication techniques, including:
	  • Clear and direct communication
	  • Active listening
	  • Verbal and non-verbal language
	  • Questioning to identify and confirm requirements
	  • Language and concepts appropriate to cultural differences
	• Follows instructions from supervisors and other relevant persons
	• Understands, interprets and applies information as required from:
	  • Regulatory, legislative, licensing and organisational requirements
	  • Environmental and OHS requirements, including material safety data sheets (MSDS)
	  • Codes and standards
	  • Plans and drawings
	  • Specifications
	  • Safety signs and symbols
	  • Organisational policies and procedures
	• Understands relevant definitions, terminology, symbols, abbreviations and language
	• Records relevant information using standard workplace documentation
	• Applies measurements and calculations using appropriate equipment, formulas and records as required
	• Reports and records hazards and risks

Teamwork	• Works as part of a team • Provides assistance and encouragement to other team members • Initiates and encourages improvements in team performance • Identifies and utilises the strengths of other team members • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities • Coordinates and actions tasks • Participates in on-site meetings
Problem solving	• Examines tools and equipment prior to use for damage, missing components or other defects • Identifies typical faults and problems and takes necessary

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Employability skill	Industry/enterprise requirements for this qualification include:
	remedial action • Rectifies simple faults with tools and equipment • Performs routine maintenance as required • Checks materials and products for conformity to specifications • Carries out data input adjustments
Initiative and enterprise	• Identifies opportunities to improve resource efficiency and makes suggestions as appropriate • Responds to change and workplace challenges • Puts ideas into action • Maximises use of resources by recycling, re-using or using appropriate disposal methods
Planning and organising	• Identifies hazards and implements appropriate hazard control measures • Selects and uses appropriate materials, tools and equipment • Determines material quantity requirements • Prioritises and sequences tasks • Applies time management skills to ensure work is completed to time requirements
Self management	• Evaluates own actions and makes judgements about performance and necessary improvements • Contributes to workplace responsibilities, such as current work site environmental/sustainability frameworks or management systems • Manages own performance to meet workplace standards • Seeks support to improve work performance • Cleans up work area, including tools and equipment
Learning	• Identifies own learning needs and seeks skill development as required • Is open to learning new ideas and techniques
Technology	• Uses calculators • Uses and operates a range of tools and equipment correctly and safely including computer-controlled equipment

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Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 30 units of competency:
  - 22 core units
  - 8 elective units.

A maximum of two of the eight required elective units may be substituted by selecting relevant units of competency from any Certificate III or IV construction qualification or qualification in another endorsed Training Package.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

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CPCCCA2002B	Use carpentry tools and equipment
CPCCCA2011A	Handle carpentry materials
CPCCCA3001A	Carry out general demolition of minor building structures
CPCCCA3002A	Carry out setting out
CPCCCA3023A	Carry out levelling operations
CPCCCM1012A	Work effectively and sustainably in the construction industry
CPCCCM1013A	Plan and organise work
CPCCCM1014A	Conduct workplace communication
CPCCCM1015A	Carry out measurements and calculations
CPCCCM2001A	Read and interpret plans and specifications
CPCCCM2002A	Carry out excavation
CPCCCM2007B	Use explosive power tools
CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCCCM2010B	Work safely at heights
CPCCCO2013A	Carry out concreting to simple forms
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Construction and erection of frames, trusses, eaves and roofs field of work

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CPCCCA3003A	Install flooring systems
CPCCCA3004A	Construct wall frames
CPCCCA3005B	Construct ceiling frames
CPCCCA3006B	Erect roof trusses
CPCCCA3007C	Construct pitched roofs
CPCCCA3008B	Construct eaves

Elective units

Installation field of work

CPCCCA3010A	Install and replace windows and doors
CPCCCA3012A	Frame and fit wet area fixtures
CPCCCA3013A	Install lining, panelling and moulding
CPCCCA3016A	Construct timber external stairs

Formwork construction field of work

CPCCCA3018A	Construct, erect and dismantle formwork for stairs and ramps
CPCCCA3019A	Erect and dismantle formwork to suspended slabs, columns, beams and walls
CPCCCA3020A	Erect and dismantle jump form formwork
CPCCCA3021A	Erect and dismantle slip form formwork

General electives

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BSBSMB301A	Investigate micro business opportunities
BSBSMB406A	Manage small business finances
CPCCCA2003A	Erect and dismantle formwork for footings and slabs on ground
CPCCCA3009B	Construct advanced roofs
CPCCCA3011A	Refurbish timber sashes to window frames
CPCCCA3014A	Construct bulkheads
CPCCCA3015A	Assemble partitions
CPCCCA3017B	Install exterior cladding
CPCCCA3022A	Install curtain walling
CPCCCM3001C	Operate elevated work platforms
CPCCSF2003A	Cut and bend materials using oxy-LPG equipment
CPCCSF2004A	Place and fix reinforcement materials
CPCCWC3003A	Install dry wall passive fire-rated systems
RIICCM210A	Install trench support
RIIOHS202A	Enter and work in confined spaces
RIIWMG203A	Drain and dewater civil construction site

Custom Content Section

Not applicable.

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CPC30313 Certificate III in Concreting

Modification History

Revised qualification deemed not equivalent to CPC30311

- qualification packaging amended:
  - total number of units required increased from 18 to 20 units
  - core units increased from 13 to 14
  - elective units increased from 5 to 6
  - core and elective units revised, including replacement with non-equivalent versions and addition of new units
- pathways information added

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Description

This qualification is designed to meet the needs of concreters working in concreting operations on residential and commercial projects.
Occupational titles could include:

- Concreter
- Concrete pump operator.

The qualification has core unit of competency requirements that cover common skills for the construction industry, as well as a specialist field of work.
The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.
Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

This qualification is suitable for an Australian Apprenticeship pathway.
Refer to CPSISC website for further career and pathway information:
http://www.cpsisc.com.au/career

Licensing/Regulatory Information

This is a licensed occupation. Check with relevant state and territory licensing and regulatory authorities. State and territory jurisdictions may have different regulatory requirements

Entry Requirements

There are no entry requirements

Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification
Communication	• Communicates with clients, colleagues and others using effective and appropriate communication techniques, including: • Clear and direct communication • Active listening • Verbal and non-verbal language

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Employability skill	Industry/enterprise requirements for this qualification
	• Questioning to identify and confirm requirements • Language and concepts appropriate to cultural differences • Follows instructions from supervisor and other relevant persons • Understands, interprets and applies information as required from: • Regulatory, legislative, licensing and organisational requirements • Environmental and WHS requirements, including safety data sheets (SDS) • Codes and standards • Plans, drawings and specifications • Delivery advice • Safety signs and symbols • Organisational policies and procedures • Understands relevant definitions, terminology, symbols, abbreviations and language • Records relevant information using standard workplace documentation • Applies measurements and calculations using appropriate equipment, formulas and records as required • Reports and records hazards and risks
Teamwork	• Works as part of a team • Provides assistance and encouragement to other team members • Initiates and encourages improvements in team performance • Identifies and uses the strengths of other team members • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities • Coordinates and actions tasks • Participates in on-site meetings
Problem solving	• Examines tools and equipment prior to use for damage, missing components or other defects • Identifies typical faults and problems and takes remedial action and/or reports to supervisor • Rectifies simple faults with tools and equipment • Carries out tests, such as slump testing of concrete and high performance concrete testing
Initiative and enterprise	• Identifies opportunities to improve resource efficiency and makes suggestions as appropriate • Responds to change and workplace challenges • Puts ideas into action • Maximises use of resources by recycling, re-using or using appropriate disposal methods

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Employability skill	Industry/enterprise requirements for this qualification
Planning and organising	• Identifies hazards and implements appropriate hazard control measures • Identifies and manages risks • Selects and uses appropriate materials, tools and equipment • Determines material quantity requirements • Prioritises and sequences tasks • Applies time management skills to ensure work is completed to time requirements
Self-management	• Evaluates own actions and makes judgements about performance and necessary improvements • Contributes to workplace responsibilities, such as current work site environmental/sustainability frameworks or management systems • Manages own performance to meet workplace standards • Seeks support to improve work performance • Cleans up work area, including tools and equipment
Learning	• Identifies own learning needs and seeks skill development as required • Is open to learning new ideas and techniques
Technology	• Uses calculators • Uses and operates a range of tools and equipment correctly and safely

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 20 units of competency:
  - 14 core units
  - 6 elective units.

The elective units must ensure the integrity of the AQF alignment and contribute to a valid, industry-supported vocational outcome and are to be chosen as follows:

- a minimum of 3 elective units are to be specialist concreting units (coded ‘CO’) from the elective units listed below
- the remaining elective units may be chosen from the elective units listed below or any Certificate III or Certificate IV qualifications in CPC08 or another current Training Package or accredited course.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

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Core units

CPCCCA2003A	Erect and dismantle formwork for footings and slabs on ground
CPCCCM1012A	Work effectively and sustainably in the construction industry
CPCCCM1013A	Plan and organise work
CPCCCM1014A	Conduct workplace communication
CPCCCM1015A	Carry out measurements and calculations
CPCCCM2001A	Read and interpret plans and specifications
CPCCCM2006B	Apply basic levelling procedures
CPCCCO2021A	Handle concreting materials
CPCCCO2022A	Use and maintain concreting plant, tools and equipment
CPCCCO3041A	Place concrete
CPCCCO3042A	Finish concrete
CPCCCO3043A	Cure concrete
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry
CPCCSF2004A	Place and fix reinforcement materials

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Elective units

CPCCCA3001A	Carry out general demolition of minor building structures
CPCCCM1016A	Identify requirements for safe tilt-up work
CPCCCM2007B	Use explosive power tools
CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCCCO3035A	Assess and specify concrete supply requirements
CPCCCO3036A	Plan concrete work and brief team
CPCCCO3044A	Carry out decorative finishes to concrete
CPCCCO3046A	Repair and rectify concrete
CPCCCO3047A	Cut and core concrete
CPCCCO3048A	Construct tilt panels on site
CPCCCO3049A	Apply and finish sprayed concrete
CPCCCO3050A	Carry out high performance concreting
CPCCCO3051A	Conduct off-form vertical concrete operations
CPCCCO3052A	Conduct concrete boom delivery operations
CPCCCO3053A	Slump test concrete
CPCCCO3054A	Operate concrete agitator trucks
CPCCCO3055A	Install topping slabs
CPCCLBM3001A	Licence to operate a concrete placing boom
CPCCSF2003A	Cut and bend materials using oxy-LPG equipment
CPCCSF3001A	Apply reinforcement schedule

Custom Content Section

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Not applicable.

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CPC30413 Certificate III in Demolition

Modification History

Revised qualification deemed not equivalent to CPC30411
Core and elective units revised resulting in the addition of 11 new units

Description

This qualification is designed to meet the needs of specialist demolition workers who dismantle and demolish public, residential, commercial and industrial buildings of all types, and process the resulting materials for salvage, recycling and waste disposal.

Occupational titles could include:

- Demolition worker
- Demolition plant operator
- Demolition leading hand.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways information

This qualification is suitable for an Australian Apprenticeship pathway.

Pathways Information

Not applicable.

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Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to demolition work in different States and Territories. Candidates are advised to consult with the relevant regulatory authorities.

Entry Requirements

There are no entry requirements.

Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification

Communication	• Communicates with clients, colleagues and others using effective and appropriate communication techniques, including:
	  • Clear and direct communication
	  • Active listening
	  • Verbal and non-verbal language
	  • Questioning to identify and confirm requirements
	  • Language and concepts appropriate to cultural differences
	• Follows instructions from supervisor and other relevant persons
	• Understands, interprets and applies information as required from:
	  • Regulatory, legislative, licensing and organisational requirements
	  • Environmental and WHS requirements, including safe work method statements (SWMS) and safety data sheets (SDS)
	  • Codes and standards
	  • Plans, drawings and specifications
	  • Schedules
	  • Work orders
	  • Load tables
	  • Safety signs and symbols
	  • Organisational policies and procedures
	• Understands relevant definitions, terminology, symbols, abbreviations and language
	• Records relevant information using standard workplace documentation
	• Applies measurements and calculations using appropriate equipment, formulas and records as required
	• Reports and records hazards and risks

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Teamwork	• Works as part of a team • Provides assistance and encouragement to other team members • Initiates and encourages improvements in team performance • Identifies and uses the strengths of other team members • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities • Coordinates and actions tasks • Participates in on-site meetings
Problem solving	• Examines plant, tools and equipment prior to use for damage, missing components or other defects • Identifies typical faults and problems and takes remedial action and/or reports to supervisor • Rectifies simple faults with tools and equipment
Initiative and enterprise	• Identifies opportunities to improve resource efficiency and makes suggestions as appropriate • Responds to change and workplace challenges • Puts ideas into action • Maximises use of resources by recycling, re-using or using appropriate disposal methods
Planning and organising	• Identifies hazards and implements appropriate hazard control measures • Identifies and manages risks • Selects and uses appropriate materials, tools and equipment • Determines material quantity requirements and conformity to requirements • Carries out inspections and checks • Prioritises and sequences tasks • Applies time management skills to ensure work is completed to time requirements
Self-management	• Evaluates own actions and makes judgements about performance and necessary improvements • Contributes to workplace responsibilities, such as current work site environmental/sustainability frameworks or management systems • Manages own performance to meet workplace standards • Seeks support to improve work performance • Cleans up work area, including tools and equipment
Learning	• Identifies own learning needs and seeks skill development as required • Is open to learning new ideas and techniques
Technology	• Uses calculators • Uses and operates a range of plant tools and equipment correctly and safely • Properly starts up, operates and shuts down equipment

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	• Carries out pre- and post-operational checks on equipment and machines • Performs tool and equipment maintenance as required

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Packaging Rules

- To achieve this qualification, the candidate must demonstrate competency in:
- 18 units of competency:
  - 8 core units
  - 10 elective units.

The elective units must ensure the integrity of the AQF alignment and contribute to a valid, industry-supported vocational outcome and are to be chosen as follows:

- a minimum of 8 and up to 10 units from the elective units listed below
- up to 2 of the units may be chosen from other Certificate III or Certificate IV qualifications in CPC08 or another current Training Package or accredited course.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

CPCCCM2001A	Read and interpret plans and specifications
CPCCCM2010B	Work safely at heights
CPCCDE3016A	Identify hazards on demolition sites and apply risk management strategies
CPCCDE3017A	Select and use hand tools and equipment for demolition tasks
CPCCDE3018A	Select and use small plant and equipment for demolition tasks
CPCCDE3019A	Demolish small buildings and structures using hand tools and small plant and equipment
CPCCDE3020A	Select and use tools and equipment for hot work in the demolition industry
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Elective units

CPCCCM1015A	Carry out measurements and calculations
CPCCCM2007B	Use explosive power tools

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CPCCCM3002A	Operate a truck mounted loading crane
CPCCDE3014A	Remove non-friable asbestos
CPCCDE3015A	Remove friable asbestos
CPCCDE3021A	Operate demolition material crushing plants
CPCCDE3022A	Manage demolition recyclable and waste materials using load shifting equipment
CPCCDE3023A	Operate skid steer loaders at ground level on demolition sites
CPCCDE3024A	Operate mobile plant on suspended floors on demolition sites
CPCCDE3025A	Operate remote-controlled plant on demolition sites
CPCCDE3026A	Operate excavators at ground level to demolish building elements
CPCCLDG3001A	Licence to perform dogging
CPCCLRG3001A	Licence to perform rigging basic level
CPCCLRG3002A	Licence to perform rigging intermediate level
CPCCLSF2001A	Licence to erect, alter and dismantle scaffolding basic level
CPCCLSF3001A	Licence to erect, alter and dismantle scaffolding intermediate level
CPCCLSF4001A	Licence to erect, alter and dismantle scaffolding advanced level
CPCCRI3001A	Operate personnel and materials hoists
CPCCSC2001A	Safely handle and use scaffolding tools and equipment
CPCCSF2003A	Cut and bend materials using oxy-LPG equipment
RIIOHS202A	Enter and work in confined spaces
RIIOHS205A	Control traffic with stop-slow bat
RIIOHS302A	Implement traffic management plan
TLILIC2001A	Licence to operate a forklift truck
TLILIC2005A	Licence to operate a boom-type elevating work platform (boom length 11 meters or more)

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Custom Content Section

Not applicable.

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CPC30511 Certificate III in Dogging

Modification History

Revised qualification deemed equivalent to CPC30511
Elective units revised resulting in a number of unit identifier changes
Elective imported units replaced with updated version

Description

This qualification provides a trade outcome in dogging operations in the construction industry.

Occupational titles may include:

- Dogger.

The qualification has core unit of competency requirements that cover common skills for the construction industry, as well as a specialist field of work.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:

Communication	• Communicates with clients, colleagues and others using effective and appropriate communication techniques, including:
	  • Clear and direct communication
	  • Active listening
	  • Verbal and non-verbal language
	  • Questioning to identify and confirm requirements
	  • Language and concepts appropriate to cultural differences
	  • Uses standard communication signals
	• Follows instructions from supervisor and other relevant persons
	• Understands, interprets and applies information as required from:
	  • Regulatory, legislative, licensing and organisational requirements
	  • Environmental and OHS requirements, including material safety data sheets (MSDS)
	  • Codes and standards
	  • Plans, drawings and specifications
	  • Schedules
	  • Load charts
	  • Safety signs and symbols
	  • Organisational policies and procedures
	• Understands relevant definitions, terminology, symbols, abbreviations and language
	• Prepares job sequencing schedule
	• Records relevant information in log books, site records, hoist books and other standard workplace documentation
	• Applies measurements and calculations using appropriate equipment, formulas and records as required
	• Reports and records hazards and risks

Teamwork	• Works as part of a team • Provides assistance and encouragement to other team members • Initiates and encourages improvements in team performance • Identifies and utilises the strengths of other team members • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities • Coordinates and actions tasks • Discusses contingency plans and advises team of changes • Participates in on-site meetings

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Employability skill	Industry/enterprise requirements for this qualification include:
Problem solving	• Examines tools and equipment prior to use for damage, missing components or other defects • Performs test lift/shifts to ensure lift suitability • Conducts daily safety check for hoist, including test run • Identifies typical faults and problems and takes remedial action and/or reports to supervisor • Rectifies simple faults with tools and equipment
Initiative and enterprise	• Identifies opportunities to improve resource efficiency and makes suggestions as appropriate • Responds to change and workplace challenges • Puts ideas into action • Maximises use of resources by recycling, re-using or using appropriate disposal methods
Planning and organising	• Identifies hazards and implements appropriate hazard control measures • Identifies and manages risks • Selects and uses appropriate materials, tools and equipment • Determines material quantity requirements • Prioritises and sequences tasks • Applies time management skills to ensure work is completed to time requirements
Self management	• Evaluates own actions and makes judgements about performance and necessary improvements • Contributes to workplace responsibilities, such as current work site environmental/sustainability frameworks or management systems • Manages own performance to meet workplace standards • Seeks support to improve work performance • Cleans up work area, including tools and equipment
Learning	• Identifies own learning needs and seeks skill development as required • Is open to learning new ideas and techniques

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Employability skill	Industry/enterprise requirements for this qualification include:
Technology	• Uses calculators • Uses and operates a range of tools and equipment correctly and safely • Properly starts up, operates and shuts down equipment • Carries out pre- and post-operational checks on equipment and machines • Performs tool and equipment maintenance as required

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 13 units of competency:
  - 9 core units
  - 4 elective units.

A maximum of one the four required elective units may be substituted by selecting relevant units of competency from any Certificate III or IV construction qualification or qualification in another endorsed Training Package.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

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CPCCCM1012A	Work effectively and sustainably in the construction industry
CPCCCM1013A	Plan and organise work
CPCCCM1014A	Conduct workplace communication
CPCCCM1015A	Carry out measurements and calculations
CPCCCM2001A	Read and interpret plans and specifications
CPCCCM3003A	Work safely around power sources, services and assets
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Dogging field of work

CPCCLDG3001A	Licence to perform dogging
CPCCSF3001A	Apply reinforcement schedule

Elective units

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BSBSMB301A	Investigate micro business opportunities
BSBSMB406A	Manage small business finances
CPCCCM2007B	Use explosive power tools
CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCCCM2010B	Work safely at heights
CPCCCM3001C	Operate elevated work platforms
CPCCDO2011A	Handle and use dogging tools and equipment
CPCCDO3011A	Perform dogging
CPCCDO3012A	Perform crane scheduling
CPCCRI3001A	Operate personnel and materials hoists
CPCCSC2002A	Erect and dismantle basic scaffolding
RIIOHS302A	Implement traffic management plan
TLILIC2001A	Licence to operate a forklift truck

Custom Content Section

Not applicable.

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CPC30611 Certificate III in Painting and Decorating

Modification History

Revised qualification deemed equivalent to CPC30611
Core and elective units revised resulting in a number of unit identifier changes

Description

This qualification provides a trade outcome in painting and decorating for residential and commercial construction work.

Occupational titles may include:

- Painter and decorator.

The qualification has core unit of competency requirements that cover common skills for the construction industry, as well as two specialist fields of work.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:

Communication	• Communicates with clients, colleagues and others using effective and appropriate communication techniques, including:
	  • Clear and direct communication
	  • Active listening
	  • Verbal and non-verbal language
	  • Questioning to identify and confirm requirements
	  • Language and concepts appropriate to cultural differences
	• Follows instructions from supervisor and other relevant persons
	  • Understands, interprets and applies information as required from:
	  • Regulatory, legislative, licensing and organisational requirements
	  • Environmental and OHS requirements, including material safety data sheets (MSDS)
	  • Codes and standards
	  • Plans, drawings and specifications
	  • Schedules
	  • Load tables
	  • Safety signs and symbols
	  • Organisational policies and procedures
	• Understands relevant definitions, terminology, symbols, abbreviations and language
	• Prepares quotations, tender documentation and other costing documents as required
	• Records relevant information, including details of products, services, costs and inspection logs
	• Calculates materials, labour and overhead costs, including mark-up percentages
	• Applies measurements and calculations using appropriate equipment, formulas and records as required
	• Reports and records hazards and risks

Teamwork	• Works as part of a team • Provides assistance and encouragement to other team members • Initiates and encourages improvements in team performance • Identifies and utilises the strengths of other team members • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities

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Employability skill	Industry/enterprise requirements for this qualification include:
	• Coordinates and actions tasks • Participates in on-site meetings
Problem solving	• Examines tools and equipment prior to use for damage, missing components or other defects • Identifies typical faults and problems and takes remedial action and/or reports to supervisor • Checks job location and storage/holding area to ensure adequate provision of ventilation and fire safety • Carries out tests on substrate and surface materials • Matches paint colour to specified sample • Rectifies simple faults with tools and equipment
Initiative and enterprise	• Identifies opportunities to improve resource efficiency and makes suggestions as appropriate • Responds to change and workplace challenges • Puts ideas into action • Maximises use of resources by recycling, re-using or using appropriate disposal methods
Planning and organising	• Identifies hazards and implements appropriate hazard control measures • Identifies and manages risks • Selects and uses appropriate materials, tools and equipment • Carries out site inspection to confirm requirements • Estimates materials, labour and time for job • Determines material quantity requirements and checks for conformity to requirements • Prioritises and sequences tasks • Applies time management skills to ensure work is completed to time requirements
Self management	• Evaluates own actions and makes judgements about performance and necessary improvements • Contributes to workplace responsibilities, such as current work site environmental/sustainability frameworks or management systems • Manages own performance to meet workplace standards • Seeks support to improve work performance

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Employability skill	Industry/enterprise requirements for this qualification include:
	• Cleans up work area, including tools and equipment
Learning	• Identifies own learning needs and seeks skill development as required • Is open to learning new ideas and techniques
Technology	• Uses calculators • Uses and operates a range of tools and equipment correctly and safely • Properly starts up, operates and shuts down equipment • Carries out pre- and post-operational checks on tools and equipment • Performs tool and equipment maintenance as required

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 27 units of competency:
  - 23 core units
  - 4 elective units.

A maximum of two of the four required elective units may be substituted by selecting relevant units of competency from any Certificate III or IV construction qualification or qualification in another endorsed Training Package.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

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CPCCCM1012A	Work effectively and sustainably in the construction industry
CPCCCM1013A	Plan and organise work
CPCCCM1014A	Conduct workplace communication
CPCCCM1015A	Carry out measurements and calculations
CPCCCM2001A	Read and interpret plans and specifications
CPCCCM2003B	Calculate and cost construction work
CPCCCM2010B	Work safely at heights
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Painting and decorating preparation field of work

CPCCCM3001C	Operate elevated work platforms
CPCCPB3026B	Erect and maintain trestle and plank systems
CPCCPD2011A	Handle painting and decorating materials
CPCCPD2012A	Use painting and decorating tools and equipment
CPCCPD2013A	Remove and replace doors and door and window components
CPCCPD3021A	Prepare surfaces for painting

Painting and decorating operations field of work

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CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCCPD3022A	Apply paint by brush and roller
CPCCPD3023A	Apply texture coat paint finishes by brush, roller and spray
CPCCPD3024A	Apply paint by spray
CPCCPD3025A	Match specified paint colour
CPCCPD3026A	Apply stains and clear timber finishes
CPCCPD3027A	Apply wallpaper
CPCCPD3028A	Apply decorative paint finishes
CPCCPD3031A	Implement safe lead paint and asbestos work practices in the painting industry

Elective units

Specialist painting and decorating field of work

CPCCPD3029A	Remove graffiti and apply protective coatings
CPCCPD3030B	Apply protective paint coating systems
CPCCPD3032A	Apply advanced wallpaper techniques
CPCCPD3033A	Apply intumescent coatings
CPCCPD3034A	Apply advanced decorative paint finishes
CPCCSP3003A	Apply trowelled texture coat finishes

General electives

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BSBSMB301A	Investigate micro business opportunities
BSBSMB406A	Manage small business finances
LMFGG2008B	Glaze/re-glaze residential windows and doors

Custom Content Section

Not applicable.

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CPC30711 Certificate III in Rigging

Modification History

Revised qualification deemed equivalent to CPC30711
Core and elective units revised resulting in a number of unit identifier changes
Elective imported unt replaced with updated version
Change to elective unit lists:
CPCCLDG3001A Licence to perform dogging added to elective unit list to correct its omission from the packaging rules, given its status as prerequisite to CPCCLRG3001A

Description

This qualification provides a trade outcome in rigging in the construction industry.

Occupational titles may include:

- Rigger.

The qualification has core unit of competency requirements that cover common skills for the construction industry, as well as a specialist field of work.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:

Communication	• Communicates with clients, colleagues and others using effective and appropriate communication techniques, including:
	  • Clear and direct communication
	  • Active listening
	  • Verbal and non-verbal language
	  • Questioning to identify and confirm requirements
	  • Language and concepts appropriate to cultural differences
	  • Uses standard communication signals
	• Follows instructions from supervisor and other relevant persons
	• Understands, interprets and applies information as required from:
	  • Regulatory, legislative, licensing and organisational requirements
	  • Environmental and OHS requirements, including material safety data sheets (MSDS)
	  • Codes and standards
	  • Plans, drawings and specifications
	  • Schedules
	  • Load charts
	  • Safety signs and symbols
	  • Organisational policies and procedures
	• Understands relevant definitions, terminology, symbols, abbreviations and language
	• Prepares job sequencing schedule
	• Records relevant information in log books, site records, hoist books and other standard workplace documentation
	• Applies measurements and calculations using appropriate equipment, formulas and records as required
	• Reports and records hazards and risks

Teamwork	• Works as part of a team • Provides assistance and encouragement to other team members • Initiates and encourages improvements in team performance • Identifies and utilises the strengths of other team members • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities • Coordinates and actions tasks • Discusses contingency plans and advises team of changes • Participates in on-site meetings

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Employability skill	Industry/enterprise requirements for this qualification include:
Problem solving	• Examines tools and equipment prior to use for damage, missing components or other defects • Performs test lift/shifts to ensure lift suitability • Conducts daily safety check for hoist, including test run • Identifies typical faults and problems and takes remedial action and/or reports to supervisor • Rectifies simple faults with tools and equipment
Initiative and enterprise	• Identifies opportunities to improve resource efficiency and makes suggestions as appropriate • Responds to change and workplace challenges • Puts ideas into action • Maximises use of resources by recycling, re-using or using appropriate disposal methods
Planning and organising	• Identifies hazards and implements appropriate hazard control measures • Identifies and manages risks • Selects and uses appropriate materials, tools and equipment • Determines material quantity requirements • Prioritises and sequences tasks • Applies time management skills to ensure work is completed to time requirements
Self management	• Evaluates own actions and makes judgements about performance and necessary improvements • Contributes to workplace responsibilities, such as current work site environmental/sustainability frameworks or management systems • Manages own performance to meet workplace standards • Seeks support to improve work performance • Cleans up work area, including tools and equipment
Learning	• Identifies own learning needs and seeks skill development as required • Is open to learning new ideas and techniques

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Employability skill	Industry/enterprise requirements for this qualification include:
Technology	• Uses calculators • Uses and operates a range of tools and equipment correctly and safely • Properly starts up, operates and shuts down equipment • Carries out pre- and post-operational checks on equipment and machines • Performs tool and equipment maintenance as required

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 15 units of competency:
  - 11 core units
  - 4 elective units.

A maximum of one of the four required elective units may be substituted by selecting relevant units of competency from any Certificate III or IV construction qualification or qualification in another endorsed Training Package.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

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CPCCCM1012A	Work effectively and sustainably in the construction industry
CPCCCM1013A	Plan and organise work
CPCCCM1014A	Conduct workplace communication
CPCCCM1015A	Carry out measurements and calculations
CPCCCM2001A	Read and interpret plans and specifications
CPCCCM2010B	Work safely at heights
CPCCCM3001C	Operate elevated work platforms
CPCCCM3003A	Work safely around power sources, services and assets
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Rigging – basic and intermediate field of work

CPCCLRG3001A	Licence to perform rigging basic level
CPCCLRG3002A	Licence to perform rigging intermediate level

Elective units

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BSBSMB301A	Investigate micro business opportunities
BSBSMB406A	Manage small business finances
CPCCCM2007B	Use explosive power tools
CPCCCM3002A	Operate a truck mounted loading crane
CPCCLDG3001A	Licence to perform dogging
CPCCLHS3001A	Licence to operate a personnel and materials hoist
CPCCLHS3002A	Licence to operate a materials hoist
CPCCRI3001A	Operate personnel and materials hoists
CPCCRI3012A	Perform basic rigging
CPCCRI3013A	Perform intermediate rigging
CPCCRI3014A	Perform advanced structural steel erection
CPCCRI3015A	Perform advanced tilt-up slab erection
CPCCRI3016A	Perform advanced tower crane erection
CPCCSC2002A	Erect and dismantle basic scaffolding
CPCCSF2003A	Cut and bend materials using oxy-LPG equipment
RIIOHS302A	Implement traffic management plan
TLILIC2001A	Licence to operate a forklift truck

Custom Content Section

Not applicable.

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CPC30812 Certificate III in Roof Tiling

Modification History

Revised qualification deemed not equivalent to CPC30811
Change to core units:

- CPCPCM2023A revised and not equivalent to CPCPCM2043A
- CPCPCM2035A revised and not equivalent to CPCPCM2055A

Core and elective units revised resulting in a number of unit identifier changes

Description

This qualification provides a trade outcome in roof tiling for residential and commercial construction work.

Occupational titles may include:

- Roof tiler.

The qualification has core unit of competency requirements that cover common skills for the construction industry, as well as a specialist field of work.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:

Communication	• Communicates with clients, colleagues and others using effective and appropriate communication techniques, including:
	  • Clear and direct communication
	  • Active listening
	  • Verbal and non-verbal language
	  • Questioning to identify and confirm requirements
	  • Language and concepts appropriate to cultural differences
	• Follows instructions from supervisor and other relevant persons
	• Understands, interprets and applies information as required from:
	  • Regulatory, legislative, licensing and organisational requirements
	  • Environmental and OHS requirements, including material safety data sheets (MSDS)
	  • Codes and standards
	  • Plans, drawings and specifications
	  • Work sheets
	  • Safety signs and symbols
	  • Organisational policies and procedures
	• Understands relevant definitions, terminology, symbols, abbreviations and language
	• Records relevant information using standard workplace documentation
	• Applies measurements and calculations using appropriate equipment, formulas and records as required
	• Reports and records hazards and risks

Teamwork	• Works as part of a team • Provides assistance and encouragement to other team members • Initiates and encourages improvements in team performance • Identifies and utilises the strengths of other team members • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities • Coordinates and actions tasks • Participates in on-site meetings
Problem solving	• Examines tools and equipment prior to use for damage, missing components or other defects • Identifies typical faults and problems and takes remedial action

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	and/or reports to supervisor • Rectifies simple faults with tools and equipment • Checks job location to ensure adequate provision of ventilation and fire safety • Matches replacement tiles and joints for existing roof
Initiative and enterprise	• Identifies opportunities to improve resource efficiency and makes suggestions as appropriate • Responds to change and workplace challenges • Puts ideas into action • Maximises use of resources by recycling, re-using or using appropriate disposal methods
Planning and organising	• Identifies hazards and implements appropriate hazard control measures • Identifies and manages risks • Carries out site inspection to identify conditions and requirements • Selects and uses appropriate materials, tools and equipment • Determines material quantity requirements and checks for conformity to requirements • Prioritises and sequences tasks • Applies time management skills to ensure work is completed to time requirements
Self management	• Evaluates own actions and makes judgements about performance and necessary improvements • Contributes to workplace responsibilities, such as current work site environmental/sustainability frameworks or management systems • Manages own performance to meet workplace standards • Seeks support to improve work performance • Cleans up work area, including tools and equipment
Learning	• Identifies own learning needs and seeks skill development as required • Is open to learning new ideas and techniques
Technology	• Uses calculators • Uses and operates a range of tools and equipment correctly and

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	safely • Carries out pre- and post-operational checks on equipment and machines • Performs tool and equipment maintenance as required

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 17 units of competency:
  - 14 core units
  - 3 elective units.

A maximum of one of the four required elective units may be substituted by selecting relevant units of competency from any Certificate III or IV construction qualification or qualification in another endorsed Training Package.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

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CPCCCM1012A	Work effectively and sustainably in the construction industry
CPCCCM1013A	Plan and organise work
CPCCCM1014A	Conduct workplace communication
CPCCCM1015A	Carry out measurements and calculations
CPCCCM2001A	Read and interpret plans and specifications
CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry
CPCPCM2043A	Carry out WHS requirements
CPCPCM2055A	Work safely on roofs

Roof tiling field of work

CPCCRT2001A	Handle roof tiling materials
CPCCRT2002A	Use roof tiling tools and equipment
CPCCRT3001A	Tile regular roofs
CPCCRT3002A	Tile irregular roofs
CPCCRT3004B	Repair and renovate tile roofs

Elective units

Specialist roof tiling and repair field of work

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CPCCPD3030B	Apply protective paint coating systems
CPCCRT3003B	Repair and replace valleys, valley irons and flashings
CPCCRT3005B	Slate a roof
CPCCRT3006B	Fix shingles to roofs and facades

General electives

BSBSMB301A	Investigate micro business opportunities
BSBSMB406A	Manage small business finances
CPCCCM2007B	Use explosive power tools
CPCCCM2010B	Work safely at heights
CPCCCM3001C	Operate elevated work platforms
CPCCSC2002A	Erect and dismantle basic scaffolding

Custom Content Section

Not applicable.

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CPC30911 Certificate III in Scaffolding

Modification History

Revised qualification deemed equivalent to CPC30911
Elective units revised resulting in a number of unit identifier changes
Elective imported unit replaced with updated version

Description

This qualification provides a trade outcome in scaffolding operations in the residential and commercial construction industry.

Occupational titles may include:

- Scaffolder.

The qualification has core unit of competency requirements that cover common skills for the construction industry, as well as a specialist field of work.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:

Communication	• Communicates with clients, colleagues and others using effective and appropriate communication techniques, including:
	  • Clear and direct communication
	  • Active listening
	  • Verbal and non-verbal language
	  • Questioning to identify and confirm requirements
	  • Language and concepts appropriate to cultural differences
	  • Uses appropriate signalling system
	• Follows instructions from supervisor and other relevant persons
	• Understands, interprets and applies information as required from:
	  • Regulatory, legislative, licensing and organisational requirements
	  • Environmental and OHS requirements, including material safety data sheets (MSDS)
	  • Codes and standards
	  • Plans, drawings and specifications
	  • Schedules
	  • Load charts
	  • Safety signs and symbols
	  • Organisational policies and procedures
	• Understands relevant definitions, terminology, symbols, abbreviations and language
	• Records relevant information in log books, site records, hoist books and other standard workplace documentation
	• Applies measurements and calculations using appropriate equipment, formulas and records as required
	• Reports and records hazards and risks

Teamwork	• Works as part of a team • Provides assistance and encouragement to other team members • Initiates and encourages improvements in team performance • Identifies and utilises the strengths of other team members • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities • Coordinates and actions tasks • Participates in on-site meetings

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Employability skill	Industry/enterprise requirements for this qualification include:
Problem solving	• Examines tools and equipment prior to use for damage, missing components or other defects • Conducts daily safety check for hoist, including test run • Identifies typical faults and problems and takes remedial action and/or reports to supervisor • Rectifies simple faults with tools and equipment
Initiative and enterprise	• Identifies opportunities to improve resource efficiency and makes suggestions as appropriate • Responds to change and workplace challenges • Puts ideas into action • Maximises use of resources by recycling, re-using or using appropriate disposal methods
Planning and organising	• Identifies hazards and implements appropriate hazard control measures • Identifies and manages risks • Selects and uses appropriate materials, tools and equipment • Determines material quantity requirements • Prioritises and sequences tasks • Applies time management skills to ensure work is completed to time requirements
Self management	• Evaluates own actions and makes judgements about performance and necessary improvements • Contributes to workplace responsibilities, such as current work site environmental/sustainability frameworks or management systems • Manages own performance to meet workplace standards • Seeks support to improve work performance • Cleans up work area, including tools and equipment
Learning	• Identifies own learning needs and seeks skill development as required • Is open to learning new ideas and techniques
Technology	• Uses calculators • Uses and operates a range of tools and equipment correctly and safely including mechanical lifting devices • Properly starts up, operates and shuts down equipment

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Employability skill	Industry/enterprise requirements for this qualification include:
	• Carries out pre- and post-operational checks on equipment and machines • Performs tool and equipment maintenance as required

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 13 units of competency:
  - 9 core units
  - 4 elective units.

A maximum of one of the four required elective units may be substituted by selecting relevant units of competency from any Certificate III or IV construction qualification or qualification in another endorsed Training Package.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

CPCCCM1012A	Work effectively and sustainably in the construction industry
CPCCCM1013A	Plan and organise work
CPCCCM1014A	Conduct workplace communication
CPCCCM1015A	Carry out measurements and calculations
CPCCCM2001A	Read and interpret plans and specifications
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Scaffolding - basic and intermediate field of work

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CPCCSC2001A	Safely handle and use scaffolding tools and equipment
CPCCLSF2001A	Licence to erect, alter and dismantle scaffolding basic level
CPCCLSF3001A	Licence to erect, alter and dismantle scaffolding intermediate level

Elective units

BSBSMB301A	Investigate micro business opportunities
BSBSMB406A	Manage small business finances
CPCCCM2007B	Use explosive power tools
CPCCCM2010B	Work safely at heights
CPCCCM3001C	Operate elevated work platforms
CPCCCM3002A	Operate a truck mounted loading crane
CPCCLDG3001A	Licence to perform dogging
CPCCRI3001A	Operate personnel and materials hoists
CPCCSC2002A	Erect and dismantle basic scaffolding
CPCCSC3001A	Erect and dismantle intermediate scaffolding
CPCCSF2003A	Cut and bend materials using oxy-LPG equipment
RIIOHS302A	Implement traffic management plan
TLILIC2001A	Licence to operate a forklift truck

Custom Content Section

Not applicable.

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CPC31011 Certificate III in Solid Plastering

Modification History

Revised qualification deemed equivalent to CPC31011
Core and elective units revised resulting in a number of unit identifier changes

Description

This qualification provides a trade outcome in solid plastering in the residential and commercial construction industry.

Occupational titles may include:

- Plasterer.

The qualification has core unit of competency requirements that cover common skills for the construction industry, as well as a specialist field of work.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:

Communication	• Communicates with clients, colleagues and others using effective and appropriate communication techniques, including:
	  • Clear and direct communication
	  • Active listening
	  • Verbal and non-verbal language
	  • Questioning to identify and confirm requirements
	  • Language and concepts appropriate to cultural differences
	• Follows instructions from supervisor and other relevant persons
	• Understands, interprets and applies information as required from:
	  • Regulatory, legislative, licensing and organisational requirements
	  • Environmental and OHS requirements, including material safety data sheets (MSDS)
	  • Codes and standards
	  • Plans, drawings and specifications
	  • Schedules
	  • Safety signs and symbols
	  • Organisational policies and procedures
	• Understands relevant definitions, terminology, symbols, abbreviations and language
	• Records relevant information using standard workplace documentation
	• Applies measurements and calculations using appropriate equipment, formulas and records as required
	• Reports and records hazards and risks

Teamwork	• Works as part of a team • Provides assistance and encouragement to other team members • Initiates and encourages improvements in team performance • Identifies and utilises the strengths of other team members • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities • Coordinates and actions tasks • Participates in on-site meetings
Problem solving	• Examines tools and equipment prior to use for damage, missing components or other defects • Identifies typical faults and problems and takes remedial action

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Employability skill	Industry/enterprise requirements for this qualification include:
	and/or reports to supervisor • Rectifies simple faults with tools and equipment
Initiative and enterprise	• Identifies opportunities to improve resource efficiency and makes suggestions as appropriate • Responds to change and workplace challenges • Puts ideas into action • Maximises use of resources by recycling, re-using or using appropriate disposal methods
Planning and organising	• Identifies hazards and implements appropriate hazard control measures • Identifies and manages risks • Carries out site inspection to identify requirements • Selects and uses appropriate materials, tools and equipment • Determines material quantity requirements and checks for conformity to requirements • Prioritises and sequences tasks • Applies time management skills to ensure work is completed to time requirements
Self management	• Evaluates own actions and makes judgements about performance and necessary improvements • Contributes to workplace responsibilities, such as current work site environmental/sustainability frameworks or management systems • Manages own performance to meet workplace standards • Seeks support to improve work performance • Cleans up work area, including tools and equipment
Learning	• Identifies own learning needs and seeks skill development as required • Is open to learning new ideas and techniques
Technology	• Uses calculators • Uses and operates a range of tools and equipment correctly and safely • Carries out pre- and post-operational checks on equipment and

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Employability skill	Industry/enterprise requirements for this qualification include:
	machines • Performs tool and equipment maintenance as required

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 20 units of competency:
  - 15 core units
  - 5 elective units.

A maximum of one of the five required elective units may be substituted by selecting relevant units of competency from any Certificate III or IV construction qualification or qualification in another endorsed Training Package.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

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CPCCCM1012A	Work effectively and sustainably in the construction industry
CPCCCM1013A	Plan and organise work
CPCCCM1014A	Conduct workplace communication
CPCCCM1015A	Carry out measurements and calculations
CPCCCM2001A	Read and interpret plans and specifications
CPCCCM2006B	Apply basic levelling procedures
CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Solid plastering field of work

CPCCPB3012A	Cut and fix paper-faced cornices
CPCCSP2001A	Handle solid plastering materials
CPCCSP2002A	Use solid plastering tools and equipment
CPCCSP2003A	Prepare surfaces for plastering
CPCCSP3001A	Apply float and render to straight and curved surfaces
CPCCSP3002A	Apply set coats
CPCCSP3004A	Restore and renovate solid plasterwork

Elective units

Specialist plastering field of work

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CPCCSP3003A	Apply trowelled texture coat finishes
CPCCSP3005A	Install pre-cast decorative mouldings
CPCCSP3006A	Install cast plaster blockwork
CPCCSP3007A	Apply plaster by projection machine

General electives

BSBSMB301A	Investigate micro business opportunities
BSBSMB406A	Manage small business finances
CPCCCM2007B	Use explosive power tools
CPCCCM2010B	Work safely at heights
CPCCCM3001C	Operate elevated work platforms
CPCCCO2013A	Carry out concreting to simple forms
CPCCPB3026B	Erect and maintain trestle and plank systems

Custom Content Section

Not applicable.

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CPC31111 Certificate III in Steelfixing

Modification History

Revised qualification deemed equivalent to CPC31111
Core and elective units revised resulting in a number of unit identifier changes
Elective unit CPCPCM2033A revised and not equivalent to CPCPCM2053A

Description

This qualification provides a trade outcome in steelfixing in the construction industry.

Occupational titles may include:

- Steelfixer.

The qualification has core unit of competency requirements that cover common skills for the construction industry, as well as a specialist field of work.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:

Communication	• Communicates with clients, colleagues and others using effective and appropriate communication techniques, including:
	  • Clear and direct communication
	  • Active listening
	  • Verbal and non-verbal language
	  • Questioning to identify and confirm requirements
	  • Language and concepts appropriate to cultural differences
	• Follows instructions from supervisor and other relevant persons
	• Understands, interprets and applies information as required from:
	  • Regulatory, legislative, licensing and organisational requirements
	  • Environmental and OHS requirements, including material safety data sheets (MSDS)
	  • Codes and standards
	  • Plans, drawings and specifications
	  • Schedules
	  • Load tables
	  • Safety signs and symbols
	  • Organisational policies and procedures
	• Understands relevant definitions, terminology, symbols, abbreviations and language
	• Records relevant information using standard workplace documentation
	• Applies measurements and calculations using appropriate equipment, formulas and records as required
	• Reports and records hazards and risks

Teamwork	• Works as part of a team • Provides assistance and encouragement to other team members • Initiates and encourages improvements in team performance • Identifies and utilises the strengths of other team members • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities • Coordinates and actions tasks • Participates in on-site meetings
Problem solving	• Examines tools and equipment prior to use for damage, missing components or other defects

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Employability skill	Industry/enterprise requirements for this qualification include:
	• Identifies typical faults and problems and takes remedial action and/or reports to supervisor • Rectifies simple faults with tools and equipment • Investigates and resolves discrepancies in coding, numbering and materials
Initiative and enterprise	• Identifies opportunities to improve resource efficiency and makes suggestions as appropriate • Responds to change and workplace challenges • Puts ideas into action • Maximises use of resources by recycling, re-using or using appropriate disposal methods
Planning and organising	• Identifies hazards and implements appropriate hazard control measures • Identifies and manages risks • Carries out site inspection to identify requirements • Selects and uses appropriate materials, cutting methods, tools and equipment • Determines material quantity requirements • Prioritises and sequences tasks • Applies time management skills to ensure work is completed to time requirements
Self management	• Evaluates own actions and makes judgements about performance and necessary improvements • Contributes to workplace responsibilities, such as current work site environmental/sustainability frameworks or management systems • Manages own performance to meet workplace standards • Seeks support to improve work performance • Cleans up work area, including tools and equipment
Learning	• Identifies own learning needs and seeks skill development as required • Is open to learning new ideas and techniques
Technology	• Uses calculators

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Employability skill	Industry/enterprise requirements for this qualification include:
	• Uses and operates a range of tools and equipment correctly and safely • Carries out pre- and post-operational checks on equipment and machines • Performs tool and equipment maintenance as required

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 17 units of competency:
  - 14 core units
  - 3 elective units.

A maximum of one of the three required elective units may be substituted by selecting relevant units of competency from any Certificate III or IV construction qualification or qualification in another endorsed Training Package.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

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CPCCCM1012A	Work effectively and sustainably in the construction industry
CPCCCM1013A	Plan and organise work
CPCCCM1014A	Conduct workplace communication
CPCCCM1015A	Carry out measurements and calculations
CPCCCM2001A	Read and interpret plans and specifications
CPCCCM2006B	Apply basic levelling procedures
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Steelfixing field of work

CPCCSF2001A	Handle steelfixing materials
CPCCSF2002A	Use steelfixing tools and equipment
CPCCSF2003A	Cut and bend materials using oxy-LPG equipment
CPCCSF2004A	Place and fix reinforcement materials
CPCCSF2005A	Arc weld reinforcement steel
CPCCSF2006A	Machine cut reinforcement materials
CPCCSF3001A	Apply reinforcement schedule

Elective units

Specialist steelfixing field of work

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CPCCSF2007A	Splice and anchor using mechanical methods
CPCCSF3002A	Carry out monostrand post-tensioning
CPCCSF3003A	Carry out multistrand post-tensioning
CPCCSF3004A	Carry out stressbar post-tensioning

General electives

BSBSMB301A	Investigate micro business opportunities
BSBSMB406A	Manage small business finances
CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCCCO2014A	Carry out concrete work
CPCPCM2053A	Weld using manual metal arc welding equipment
RIIOHS202A	Enter and work in confined spaces

Custom Content Section

Not applicable.

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CPC31211 Certificate III in Wall and Ceiling Lining

Modification History

Revised qualification deemed equivalent to CPC31211
Core and elective units revised resulting in a number of unit identifier changes

Description

This qualification provides a trade outcome in wall and ceiling lining.

Occupational titles may include:

- Wall and ceiling liner.

The qualification has core unit of competency requirements that cover common skills for the construction industry, as well as two specialist fields of work.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:

Communication	• Communicates with clients, colleagues and others using effective and appropriate communication techniques, including:
	  • Clear and direct communication
	  • Active listening
	  • Verbal and non-verbal language
	  • Questioning to identify and confirm requirements
	  • Language and concepts appropriate to cultural differences
	• Follows instructions from supervisor and other relevant persons
	• Understands, interprets and applies information as required from:
	  • Regulatory, legislative, licensing and organisational requirements
	  • Environmental and OHS requirements, including material safety data sheets (MSDS)
	  • Codes and standards
	  • Plans, drawings and specifications
	  • Work orders
	  • Photographs
	  • Contracts
	  • Street directories and road maps
	  • Safety signs and symbols
	  • Organisational policies and procedures
	• Understands relevant definitions, terminology, symbols, abbreviations and language
	• Records relevant information using standard workplace documentation
	• Applies measurements and calculations using appropriate equipment, formulas and records as required
	• Reports and records hazards and risks

Teamwork	• Works as part of a team • Provides assistance and encouragement to other team members • Initiates and encourages improvements in team performance • Identifies and utilises the strengths of other team members • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities • Coordinates and actions tasks • Participates in on-site meetings

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Problem solving	• Examines tools and equipment prior to use for damage, missing components or other defects • Identifies typical faults and problems and takes remedial action and/or reports to supervisor • Rectifies simple faults with tools and equipment
Initiative and enterprise	• Identifies opportunities to improve resource efficiency and makes suggestions as appropriate • Responds to change and workplace challenges • Puts ideas into action • Maximises use of resources by recycling, re-using or using appropriate disposal methods
Planning and organising	• Identifies hazards and implements appropriate hazard control measures • Identifies and manages risks • Selects and uses appropriate materials, tools and equipment • Selects appropriate travel route and estimates travel time • Identifies products for storage, appropriate stock records and inventory systems, and prepares storage area • Determines material quantity requirements and conformity to requirements • Prioritises and sequences tasks • Applies time management skills to ensure work is completed to time requirements
Self management	• Evaluates own actions and makes judgements about performance and necessary improvements • Contributes to workplace responsibilities, such as current work site environmental/sustainability frameworks or management systems • Manages own performance to meet workplace standards • Seeks support to improve work performance • Cleans up work area, including tools and equipment
Learning	• Identifies own learning needs and seeks skill development as required • Is open to learning new ideas and techniques

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Technology	• Uses calculators • Uses and operates a range of tools and equipment correctly and safely • Properly starts up, operates and shuts down equipment • Carries out pre- and post-operational checks on equipment and machines • Performs tool and equipment maintenance as required

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 26 units of competency:
  - 19 core units
  - 7 elective units.

A maximum of two of the seven required elective units may be substituted by selecting relevant units of competency from any Certificate III or IV construction qualification or qualification in another endorsed Training Package.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

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CPCCCM1012A	Work effectively and sustainably in the construction industry
CPCCCM1013A	Plan and organise work
CPCCCM1014A	Conduct workplace communication
CPCCCM1015A	Carry out measurements and calculations
CPCCCM2001A	Read and interpret plans and specifications
CPCCCM2010B	Work safely at heights
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Fixing (hanging) field of work

CPCCPB3001A	Fix standard plasterboard wall sheets
CPCCPB3002A	Fix standard plasterboard ceiling sheets
CPCCPB3003A	Fix battens
CPCCPB3004A	Fix wet area sheets
CPCCPB3005A	Fix ceiling sheets to external protected areas
CPCCPB3006A	Fix fibre cement board

Finishing (stopping, sanding and cornices) field of work

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CPCCPB3007A	Apply levels of finish standards to planning and inspection of own work
CPCCPB3008A	Mix plastering compounds
CPCCPB3009A	Finish plasterboard joins manually
CPCCPB3010A	Manually sand plaster work
CPCCPB3011A	Finish category 1 and 2 wet areas
CPCCPB3012A	Cut and fix paper-faced cornices

Elective units

Commercial wall and ceiling lining field of work

CPCCCA3014A	Construct bulkheads
CPCCCA3015A	Assemble partitions
CPCCCM2006B	Apply basic levelling procedures
CPCCCM2007B	Use explosive power tools
CPCCWC3001A	Install and finish plasterboard and fibre cement sheeting to curved walls and ceilings
CPCCWC3003A	Install dry wall passive fire-rated systems
CPCCWC3004A	Install suspended ceilings

Plasterboard handling field of work

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CPCCPB3023A	Load and unload plaster and plaster-related products
CPCCPB3024A	Use manual handling equipment to manoeuvre plaster products
CPCCPB3025A	Store plasterboard and related products

General electives

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BSBSMB301A	Investigate micro business opportunities
BSBSMB406A	Manage small business finances
CPCCCA3001A	Carry out general demolition of minor building structures
CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCCCM3001C	Operate elevated work platforms
CPCCPB3013A	Plan travel routes
CPCCPB3014A	Install batt insulation products
CPCCPB3015A	Install acoustic and thermal environmental protection systems
CPCCPB3016A	Install and finish columns
CPCCPB3017A	Rectify faults in plaster applications
CPCCPB3018A	Use vacuum and electric sanding equipment to finish plaster work
CPCCPB3019A	Inspect equipment for serviceability
CPCCPB3020A	Match, mitre and install cast ornamental cornices
CPCCPB3021A	Install and fix residential acoustic plaster products
CPCCPB3022A	Use mechanical jointing equipment to finish joints
CPCCPB3026B	Erect and maintain trestle and plank systems
CPCCPB3027A	Install ceiling insulation
CPCCSP3003A	Apply trowelled texture coat finishes
CPCCSP3005A	Install pre-cast decorative mouldings
CPCCWC2001A	Complete penetrations and flashings
CPCCWC3002A	Install and finish plasterboard and fibre cement sheeting to arches

Custom Content Section

Not applicable.

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CPC31311 Certificate III in Wall and Floor Tiling

Modification History

Revised qualification deemed equivalent to CPC31311
Core and elective units revised resulting in a number of unit identifier changes

Description

This qualification provides a trade outcome in wall and floor tiling for residential and commercial construction work.

Occupational titles may include:

- Tiler
- Wall and floor tiler.

The qualification has core unit of competency requirements that cover common skills for the construction industry, as well as a specialist field of work.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:

Communication	• Communicates with clients, colleagues and others using effective and appropriate communication techniques, including:
	  • Clear and direct communication
	  • Active listening
	  • Verbal and non-verbal language
	  • Questioning to identify and confirm requirements
	  • Language and concepts appropriate to cultural differences
	• Follows instructions from supervisor and other relevant persons
	• Understands, interprets and applies information as required from:
	  • Regulatory, legislative, licensing and organisational requirements
	  • Environmental and OHS requirements, including material safety data sheets (MSDS)
	  • Codes and standards
	  • Plans, drawings and specifications
	  • Load tables
	  • Safety signs and symbols
	  • Organisational policies and procedures
	• Understands relevant definitions, terminology, symbols, abbreviations and language
	• Records relevant information using standard workplace documentation
	• Applies measurements and calculations using appropriate equipment, formulas and records as required
	• Reports and records hazards and risks

Teamwork	• Works as part of a team • Provides assistance and encouragement to other team members • Initiates and encourages improvements in team performance • Identifies and utilises the strengths of other team members • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities • Coordinates and actions tasks • Participates in on-site meetings
Problem solving	• Examines tools and equipment prior to use for damage, missing components or other defects • Identifies typical faults and problems and takes remedial action

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Employability skill	Industry/enterprise requirements for this qualification include:
	and/or reports to supervisor • Rectifies simple faults with tools and equipment
Initiative and enterprise	• Identifies opportunities to improve resource efficiency and makes suggestions as appropriate • Responds to change and workplace challenges • Puts ideas into action • Maximises use of resources by recycling, re-using or using appropriate disposal methods • Identifies suitable architectural or historical periods for tiling and produces a range of appropriate tile patterns
Planning and organising	• Identifies hazards and implements appropriate hazard control measures • Identifies and manages risks • Selects and uses appropriate materials, tools and equipment • Carries out site inspections • Conducts checks prior to and following waterproofing installation • Determines material quantity requirements, conformity to requirements and compatibility with surface material, preparation and waterproofing installation technique • Sets out tiling job according to requirements • Prioritises and sequences tasks • Applies time management skills to ensure work is completed to time requirements
Self management	• Evaluates own actions and makes judgements about performance and necessary improvements • Contributes to workplace responsibilities, such as current work site environmental/sustainability frameworks or management systems • Manages own performance to meet workplace standards • Seeks support to improve work performance • Cleans up work area, including tools and equipment
Learning	• Identifies own learning needs and seeks skill development as required • Is open to learning new ideas and techniques

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Employability skill	Industry/enterprise requirements for this qualification include:
Technology	• Uses calculators • Uses and operates a range of tools and equipment correctly and safely • Properly starts up, operates and shuts down equipment • Carries out pre- and post-operational checks on equipment and machines • Performs tool and equipment maintenance as required

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 19 units of competency:
  - 16 core units
  - 3 elective units.

A maximum of one of the three required elective units may be substituted by selecting relevant units of competency from any Certificate III or IV construction qualification or qualification in another endorsed Training Package.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

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CPCCCM1012A	Work effectively and sustainably in the construction industry
CPCCCM1013A	Plan and organise work
CPCCCM1014A	Conduct workplace communication
CPCCCM1015A	Carry out measurements and calculations
CPCCCM2001A	Read and interpret plans and specifications
CPCCCM2006B	Apply basic levelling procedures
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Wall and floor tiling field of work

CPCCWF2001A	Handle wall and floor tiling materials
CPCCWF2002A	Use wall and floor tiling tools and equipment
CPCCWF3001A	Prepare surfaces for tiling application
CPCCWF3002A	Fix floor tiles
CPCCWF3003A	Fix wall tiles
CPCCWF3004A	Repair wall and floor tiles
CPCCWF3006A	Carry out mosaic tiling
CPCCWF3007A	Tile curved surfaces
CPCCWP3002A	Apply waterproofing process to internal wet areas

Elective units

Advanced tiling field of work

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CPCCWF3005A	Carry out decorative tiling
CPCCWF3008A	Tile domestic pools and spas

General electives

BSBSMB301A	Investigate micro business opportunities
BSBSMB406A	Manage small business finances
CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCCCM2010B	Work safely at heights
CPCCCM3001C	Operate elevated work platforms
CPCCCO2013A	Carry out concreting to simple forms

Custom Content Section

Not applicable.

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CPC31411 Certificate III in Construction Waterproofing

Modification History

Revised qualification deemed equivalent to CPC31411
Elective units revised resulting in a number of unit identifier changes

Description

This qualification provides a trade outcome in waterproofing for the residential and commercial construction industry.

Occupational titles may include:

- Waterproofer.

The qualification has core unit of competency requirements that cover common skills for the construction industry, as well as two specialist fields of work.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

Not Applicable

Licensing/Regulatory Information

Entry Requirements

Not Applicable

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:

Communication	• Communicates with clients, colleagues and others using effective and appropriate communication techniques, including:
	  • Clear and direct communication
	  • Active listening
	  • Verbal and non-verbal language
	  • Questioning to identify and confirm requirements
	  • Language and concepts appropriate to cultural differences
	• Follows instructions from supervisor and other relevant persons
	• Understands, interprets and applies information as required from:
	  • Regulatory, legislative, licensing and organisational requirements
	  • Environmental and OHS requirements, including material safety data sheets (MSDS)
	  • Codes and standards
	  • Plans, drawings and specifications
	  • Design concepts
	  • Technical reports
	  • Load tables
	  • Safety signs and symbols
	  • Organisational policies and procedures
	• Understands relevant definitions, terminology, symbols, abbreviations and language
	• Records relevant information using standard workplace documentation
	• Applies measurements and calculations using appropriate equipment, formulas and records as required
	• Reports and records hazards and risks

Teamwork	• Works as part of a team • Provides assistance and encouragement to other team members • Initiates and encourages improvements in team performance • Identifies and utilises the strengths of other team members • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities • Coordinates and actions tasks • Participates in on-site meetings

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Employability skill	Industry/enterprise requirements for this qualification include:
Problem solving	• Examines tools and equipment prior to use for damage, missing components or other defects • Identifies typical faults and problems and takes remedial action and/or reports to supervisor • Rectifies simple faults with tools and equipment • Identifies methods of prevention and control for water penetration • Carries out tests to determine appropriateness of the installation and any contaminants, moisture or incompatible materials
Initiative and enterprise	• Identifies opportunities to improve resource efficiency and makes suggestions as appropriate • Responds to change and workplace challenges • Puts ideas into action • Maximises use of resources by recycling, re-using or using appropriate disposal methods
Planning and organising	• Identifies hazards and implements appropriate hazard control measures • Identifies and manages risks • Selects and uses appropriate materials, tools and equipment • Carries out inspections and checks including site inspections • Determines material quantity requirements and conformity to requirements • Determines compatibility of surface material with preparation and waterproofing installation techniques • Prioritises and sequences tasks • Applies time management skills to ensure work is completed to time requirements
Self management	• Evaluates own actions and makes judgements about performance and necessary improvements • Contributes to workplace responsibilities, such as current work site environmental/sustainability frameworks or management systems • Manages own performance to meet workplace standards • Seeks support to improve work performance • Cleans up work area, including tools and equipment

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Employability skill	Industry/enterprise requirements for this qualification include:
Learning	• Identifies own learning needs and seeks skill development as required • Is open to learning new ideas and techniques
Technology	• Uses calculators • Uses and operates a range of tools and equipment correctly and safely • Properly starts up, operates and shuts down equipment • Carries out pre- and post-operational checks on equipment and machines • Performs tool and equipment maintenance as required

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 19 units of competency:
  - 14 core units
  - 5 elective units.

A maximum of two of the five required elective units may be substituted by selecting relevant units of competency from any Certificate III or IV construction qualification or qualification in another endorsed Training Package.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

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CPCCCM1012A	Work effectively and sustainably in the construction industry
CPCCCM1013A	Plan and organise work
CPCCCM1014A	Conduct workplace communication
CPCCCM1015A	Carry out measurements and calculations
CPCCCM2001A	Read and interpret plans and specifications
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Waterproofing preparation field of work

CPCCWP2001A	Handle waterproofing materials
CPCCWP2002A	Use waterproofing tools and equipment
CPCCWP2003A	Prepare for construction waterproofing process
CPCCWP2004A	Prepare surfaces for waterproofing application

Waterproofing operations field of work

CPCCWP3001A	Apply waterproofing process to below ground level wet areas
CPCCWP3002A	Apply waterproofing process to internal wet areas
CPCCWP3003A	Apply waterproofing process to external wet areas
CPCCWP3004A	Apply waterproofing remedial processes

Elective units

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BSBSMB301A	Investigate micro business opportunities
BSBSMB406A	Manage small business finances
CPCCCA3012A	Frame and fit wet area fixtures
CPCCCM2002A	Carry out excavation
CPCCCM2006B	Apply basic levelling procedures
CPCCCM2007B	Use explosive power tools
CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCCCM2009A	Carry out basic demolition
CPCCCM2010B	Work safely at heights
CPCCCM3001C	Operate elevated work platforms
CPCCCO2013A	Carry out concreting to simple forms
CPCCSH2003A	Apply and install sealant and sealant devices

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CPC31511 Certificate III in Formwork/Falsework

Modification History

Revised qualification deemed equivalent to CPC31511
Core and elective units revised resulting in a number of unit identifier changes

Description

This qualification provides a trade outcome in construction of formwork and falsework. covering work in residential and commercial applications.

Occupational titles may include:

- Formworker.

The qualification has core unit of competency requirements that cover common skills for the construction industry, as well as a specialist field of work.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:

Communication	• Communicates with clients, colleagues and others using effective and appropriate communication techniques, including:
	  • Clear and direct communication
	  • Active listening
	  • Verbal and non-verbal language
	  • Questioning to identify and confirm requirements
	  • Language and concepts appropriate to cultural differences
	• Follows instructions from supervisor and other relevant persons
	• Understands, interprets and applies information as required from:
	  • Regulatory, legislative, licensing and organisational requirements
	  • Environmental and OHS requirements, including material safety data sheets (MSDS)
	  • Codes and standards
	  • Plans, drawings and specifications
	  • Schedules
	  • Work orders
	  • Load tables
	  • Safety signs and symbols
	  • Organisational policies and procedures
	• Understands relevant definitions, terminology, symbols, abbreviations and language
	• Records relevant information using standard workplace documentation
	• Applies measurements and calculations using appropriate equipment, formulas and records as required
	• Reports and records hazards and risks

Teamwork	• Works as part of a team • Provides assistance and encouragement to other team members • Initiates and encourages improvements in team performance • Identifies and utilises the strengths of other team members • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities • Coordinates and actions tasks • Participates in on-site meetings

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Employability skill	Industry/enterprise requirements for this qualification include:
Problem solving	• Examines tools and equipment prior to use for damage, missing components or other defects • Identifies typical faults and problems and takes remedial action and/or reports to supervisor • Rectifies simple faults with tools and equipment
Initiative and enterprise	• Identifies opportunities to improve resource efficiency and makes suggestions as appropriate • Responds to change and workplace challenges • Puts ideas into action • Maximises use of resources by recycling, re-using or using appropriate disposal methods
Planning and organising	• Identifies hazards and implements appropriate hazard control measures • Identifies and manages risks • Selects and uses appropriate materials, tools and equipment • Carries out inspections and checks • Determines material quantity requirements • Prioritises and sequences tasks • Applies time management skills to ensure work is completed to time requirements
Self management	• Evaluates own actions and makes judgements about performance and necessary improvements • Contributes to workplace responsibilities, such as current work site environmental/sustainability frameworks or management systems • Manages own performance to meet workplace standards • Seeks support to improve work performance • Cleans up work area, including tools and equipment
Learning	• Identifies own learning needs and seeks skill development as required • Is open to learning new ideas and techniques
Technology	• Uses calculators • Uses and operates a range of tools and equipment correctly and

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Employability skill	Industry/enterprise requirements for this qualification include:
	safely • Properly starts up, operates and shuts down equipment • Carries out pre- and post-operational checks on equipment and machines • Performs tool and equipment maintenance as required

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 25 units of competency:
  - 19 core units
  - 6 elective units.

A maximum of two of the required six elective units may be substituted by selecting relevant units of competency from any Certificate III or IV construction qualification or qualification in another endorsed Training Package.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

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CPCCCA2002B	Use carpentry tools and equipment
CPCCCA2011A	Handle carpentry materials
CPCCCA3001A	Carry out general demolition of minor building structures
CPCCCA3002A	Carry out setting out
CPCCCA3023A	Carry out levelling operations
CPCCCM1012A	Work effectively and sustainably in the construction industry
CPCCCM1013A	Plan and organise work
CPCCCM1014A	Conduct workplace communication
CPCCCM1015A	Carry out measurements and calculations
CPCCCM2001A	Read and interpret plans and specifications
CPCCCM2002A	Carry out excavation
CPCCCM2007B	Use explosive power tools
CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCCCM2010B	Work safely at heights
CPCCCO2013A	Carry out concreting to simple forms
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Formwork construction field of work

CPCCCA2003A	Erect and dismantle formwork for footings and slabs on ground
CPCCCA3018A	Construct, erect and dismantle formwork for stairs and ramps
CPCCCA3019A	Erect and dismantle formwork to suspended slabs, columns, beams and walls

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Elective units

BSBSMB301A	Investigate micro business opportunities
BSBSMB406A	Manage small business finances
CPCCCA3014A	Construct bulkheads
CPCCCA3015A	Assemble partitions
CPCCCA3016A	Construct timber external stairs
CPCCCA3020A	Erect and dismantle jump form formwork
CPCCCA3021A	Erect and dismantle slip form formwork
CPCCCA3022A	Install curtain walling
CPCCCM3001C	Operate elevated work platforms
CPCCSF2003A	Cut and bend materials using oxy-LPG equipment
CPCCSF2004A	Place and fix reinforcement materials
CPCCWC3003A	Install dry wall passive fire-rated systems
RIICCM210A	Install trench support
RIIOHS202A	Enter and work in confined spaces
RIIWMG203A	Drain and dewater civil construction site

Custom Content Section

Not applicable.

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CPC31611 Certificate III in Paving

Modification History

Revised qualification deemed equivalent to CPC31611
Core and elective units revised resulting in a number of unit identifier changes

Description

This qualification provides a trade outcome in paving for domestic or commercial projects.

Occupational titles may include:

- Paver.

The qualification has core unit of competency requirements that cover common skills for the construction industry, as well as four specialist fields of work.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:

Communication	• Communicates with clients, colleagues and others using effective and appropriate communication techniques, including:
	  • Clear and direct communication
	  • Active listening
	  • Verbal and non-verbal language
	  • Questioning to identify and confirm requirements
	  • Language and concepts appropriate to cultural differences
	• Follows instructions from supervisor and other relevant persons
	• Understands, interprets and applies information as required from:
	  • Regulatory, legislative, licensing and organisational requirements
	  • Environmental and OHS requirements, including material safety data sheets (MSDS)
	  • Codes and standards
	  • Plans and drawings
	  • Specifications
	  • Safety signs and symbols
	  • Organisational policies and procedures
	  • Soil class charts
	  • Designs
	• Understands relevant definitions, terminology, symbols, abbreviations and language
	• Records relevant information using standard workplace documentation
	• Applies measurements and calculations using appropriate equipment, formulas and records as required
	• Reports and records hazards and risks

Teamwork	• Works as part of a team • Provides assistance and encouragement to other team members • Initiates and encourages improvements in team performance • Identifies and utilises the strengths of other team members • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities • Coordinates and actions tasks • Participates in on-site meetings

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Employability skill	Industry/enterprise requirements for this qualification include:
Problem solving	• Examines tools and equipment prior to use for damage, missing components or other defects • Identifies typical faults and problems and takes necessary remedial action • Rectifies simple faults with tools and equipment • Perform routine maintenance as required • Checks materials and products for conformity to specifications
Initiative and enterprise	• Identifies opportunities to improve resource efficiency and makes suggestions as appropriate • Responds to change and workplace challenges • Puts ideas into action • Maximises use of resources by recycling, re-using or using appropriate disposal methods
Planning and organising	• Identifies hazards and implements appropriate hazard control measures • Selects and uses appropriate materials, tools and equipment • Determines material quantity requirements • Prioritises and sequences tasks • Applies time management skills to ensure work is completed to time requirements
Self management	• Evaluates own actions and makes judgements about performance and necessary improvements • Contributes to workplace responsibilities, such as current work site environmental/sustainability frameworks or management systems • Manages own performance to meet workplace standards • Seeks support to improve work performance • Cleans up work area, including tools and equipment
Learning	• Identifies own learning needs and seeks skill development as required • Is open to learning new ideas and techniques
Technology	• Uses calculators • Uses and operates a range of tools and equipment correctly and

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Employability skill	Industry/enterprise requirements for this qualification include:
	safely

Packaging Rules

Packaging rules

To achieve this qualification, the candidate must demonstrate competency in:

- 21 units of competency:
  - 18 core units
  - 3 elective units.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

CPCCCM1012A	Work effectively and sustainably in the construction industry
CPCCCM1013A	Plan and organise work
CPCCCM1014A	Conduct workplace communication
CPCCCM1015A	Carry out measurements and calculations
CPCCCM2001A	Read and interpret plans and specifications
CPCCCM2004A	Handle construction materials
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry
CPCCVE1011A	Undertake a basic construction project

Segmental paving preparation field of work

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CPCCCM2002A	Carry out excavation
CPCCCM2006B	Apply basic levelling procedures
CPCCCO2013A	Carry out concreting to simple forms
CPCCPA3001A	Prepare subgrade, base and bedding course for segmental paving

Segmental paver laying field of work

CPCCPA3002A	Lay segmental pavers
CPCCPA3003A	Cut segmental pavers
CPCCPA3004A	Finish segmental paving

Steps and retaining wall construction field of work

AHCLSC307A	Implement a retaining wall project
CPCCBL3004A	Construct masonry steps and stairs

Paving maintenance field of work

CPCCPA3005A	Maintain and repair segmental paving

Elective units

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AHCLSC303A	Construct brick and/or block structures and features
BSBSMB301A	Investigate micro business opportunities
BSBSMB406A	Manage small business finances
CPCCCA3001A	Carry out general demolition of minor building structures
CPCCCM2003B	Calculate and cost construction work
CPCCCM2005B	Use construction tools and equipment
CPCCDE2012A	Carry out manual general demolition
CPCCSF2004A	Place and fix reinforcement materials
RIIWMG203A	Drain and dewater civil construction site

Custom Content Section

Not applicable.

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CPC31712 Certificate III in Post-Tensioning

Modification History

Version	Comment
1	This version first released with CPC08 Version 8.

Description

This qualification provides a trade outcome in post-tensioning in the construction industry.

Occupational titles may include:

- post-tensioner.

The qualification has core unit of competency requirements that cover common skills for the construction industry, as well as a specialist field of work.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

Refer to CPSISC website for career and pathway information:
http://www.cpsisc.com.au/career

Licensing/Regulatory Information

Check with relevant state and territory licensing and regulatory authorities.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification

Communication	• communicates with clients, colleagues and others using effective and appropriate communication techniques, including:
	  • clear and direct communication
	  • active listening
	  • verbal and non-verbal language
	  • questioning to identify and confirm requirements
	  • language and concepts appropriate to cultural differences
	• follows instructions from supervisor and other relevant persons
	• understands, interprets and applies information as required from:
	  • regulatory, legislative, licensing and organisational requirements
	  • environmental and OHS requirements, including material safety data sheets (MSDS)
	  • codes and standards
	  • plans, drawings and specifications
	  • schedules
	  • load tables, including calibration certificates
	  • safety signs and symbols
	  • organisational policies and procedures
	• understands relevant definitions, terminology, symbols, abbreviations and language
	• records relevant information using standard workplace documentation
	• applies measurements and calculations using appropriate equipment, formulas and records as required
	• records and reports hazards and risks

Teamwork	• works as part of a team • provides assistance and encouragement to other team members • initiates and encourages improvements in team performance • identifies and uses the strengths of other team members • relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities • coordinates and actions tasks • participates in on-site meetings
Problem solving	• examines tools and equipment prior to use for damage, missing components or other defects • identifies typical faults and problems and takes remedial action and/or

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Employability skill	Industry/enterprise requirements for this qualification
	reports to supervisor • rectifies simple faults with tools and equipment • investigates and resolves discrepancies in coding, numbering and materials
Initiative and enterprise	• identifies opportunities to improve resource efficiency and makes suggestions as appropriate • responds to change and workplace challenges • puts ideas into action • maximises use of resources by recycling, re-using or using appropriate disposal methods
Planning and organising	• identifies hazards and implements appropriate hazard control measures • identifies and manages risks • carries out site inspection to identify requirements • selects and uses appropriate materials, cutting methods, tools and equipment • determines material quantity requirements • prioritises and sequences tasks • applies time-management skills to ensure work is completed to time requirements
Self-management	• evaluates own actions and makes judgements about performance and necessary improvements • contributes to workplace responsibilities, such as current work site environmental/sustainability frameworks and management systems • manages own performance to meet workplace standards • seeks support to improve work performance • cleans up work area, including tools and equipment
Learning	• identifies own learning needs and seeks skill development as required • is open to learning new ideas and techniques
Technology	• uses calculators • uses and operates a range of tools and equipment correctly and safely • carries out pre- and post-operational checks on equipment and

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Employability skill	Industry/enterprise requirements for this qualification
	machines • performs tool and equipment maintenance as required

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 17 units of competency:
  - 12 core units
  - 5 elective units.

The elective units must ensure the integrity of the AQF alignment and contribute to a valid, industry-supported vocational outcome and are to be chosen as follows:

- 5 units from the elective units listed below
- 1 of the units may be chosen from other Certificate III qualifications in CPC08 or another current Training Package or accredited course.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

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CPCCCM1012A	Work effectively and sustainably in the construction industry
CPCCCM1014A	Conduct workplace communication
CPCCCM1015A	Carry out measurements and calculations
CPCCCM2001A	Read and interpret plans and specifications
CPCCCM2004A	Handle construction materials
CPCCCM2005B	Use construction tools and equipment
CPCCCM2010B	Work safely at heights
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry
CPCCSF2002A	Use steelfixing tools and equipment
CPCCSF3002A	Carry out monostrand post-tensioning
CPCCSF3003A	Carry out multistrand post-tensioning
CPCCSF3004A	Carry out stressbar post-tensioning

Elective units

CPCCCO3026A	Carry out repair and rectification of concrete
CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCCCM3001C	Operate elevated work platforms
CPCCCO2014A	Carry out concrete work
CPCCSF2005A	Arc weld reinforcement steel
CPCCSF2007A	Splice and anchor using mechanical methods
CPCPCM2053A	Weld using manual metal arc welding equipment
CPCPCM4011A	Carry out work-based risk control processes
RIICFW302A	Install temporary and permanent rock anchors
RIIOHS202A	Enter and work in confined spaces

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Custom Content Section

Not applicable.

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CPC31812 Certificate III in Shopfitting

Modification History

Revised qualification deemed not equivalent to CPC31811
Core and elective units revised resulting in a number of unit identifier changes
Change to core unit:

- CPCCSH3004A revised and not equivalent to CPCCSH3006A

Description

This qualification provides a trade outcome in shopfitting.
Occupational titles may include:

- Shopfitter.

The qualification has core unit of competency requirements that cover common skills for the construction industry, as well as a specialist field of work.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:

Communication	• Communicates with clients, colleagues and others using effective and appropriate communication techniques, including:
	  • clear and direct communication
	  • active listening
	  • verbal and non-verbal language
	  • questioning to identify and confirm requirements
	  • language and concepts appropriate to cultural differences
	  • follows instructions from supervisor and other relevant persons
	• Understands, interprets and applies information as required from:
	  • Regulatory, legislative, licensing and organisational requirements
	  • Environmental and OHS requirements, including material safety data sheets (MSDS)
	  • Codes and standards
	  • Plans and drawings
	  • Specifications
	  • Safety signs and symbols
	  • Organisational policies and procedures
	• Understands relevant definitions, terminology, symbols, abbreviations and language
	• Records relevant information using standard workplace documentation
	• Applies measurements and calculations using appropriate equipment, formulas and records as required
	• Reports and records hazards and risks

Teamwork	• Works as part of a team • Provides assistance and encouragement to other team members • Initiates and encourages improvements in team performance • Identifies and utilises the strengths of other team members • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental

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Employability skill	Industry/enterprise requirements for this qualification include:
	abilities • Coordinates and actions tasks • Participates in on-site meetings
Problem solving	• Examines tools and equipment prior to use for damage, missing components or other defects • Identifies typical faults and problems and takes necessary remedial action • Rectifies simple faults with tools and equipment • Performs routine maintenance as required • Checks materials and products for conformity to specifications
Initiative and enterprise	• Identifies opportunities to improve resource efficiency and makes suggestions as appropriate • Responds to change and workplace challenges • Puts ideas into action • Maximises use of resources by recycling, re-using or using appropriate disposal methods
Planning and organising	• Identifies hazards and implements appropriate hazard control measures • Selects and uses appropriate materials, tools and equipment • Determines material quantity requirements • Prioritises and sequences tasks • Applies time management skills to ensure work is completed to time requirements
Self management	• Evaluates own actions and makes judgements about performance and necessary improvements • Contributes to workplace responsibilities, such as current work site environmental/sustainability frameworks or management systems • Manages own performance to meet workplace standards • Seeks support to improve work performance • Cleans up work area, including tools and equipment

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Employability skill	Industry/enterprise requirements for this qualification include:
Learning	• Identifies own learning needs and seeks skill development as required • Is open to learning new ideas and techniques
Technology	• Uses calculators • Uses and operates a range of tools and equipment correctly and safely

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 30 units of competency:
  - 19 core units
  - 11 elective units.

A maximum of two of the required eleven elective units may be substituted by selecting relevant units of competency from any Certificate III or IV construction qualification or qualification in another endorsed Training Package.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

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CPCCCM1012A	Work effectively and sustainably in the construction industry
CPCCCM1013A	Plan and organise work
CPCCCM1014A	Conduct workplace communication
CPCCCM1015A	Carry out measurements and calculations
CPCCCM2001A	Read and interpret plans and specifications
CPCCCM2004A	Handle construction materials
CPCCCM2005B	Use construction tools and equipment
CPCCCM2006B	Apply basic levelling procedures
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Shopfitting field of work

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CPCCCA3010A	Install and replace windows and doors
CPCCJN3001A	Use static machines
CPCCJN3005A	Cut and install glass
CPCCSH2001A	Prepare surfaces
CPCCSH2002A	Use aluminium sections for fabrication
CPCCSH3001A	Set out and assemble cabinets, showcases, wall units, counters and workstations
CPCCSH3002A	Set out and fabricate shopfront commercial entries bulkheads and component fittings
CPCCSH3003A	Assemble and install shopfront commercial entries bulkheads and components
CPCCSH3005A	Apply and trim decorative finishes
CPCCSH3006A	Apply finishes

Elective units

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BSBSMB301A	Investigate micro business opportunities
BSBSMB406A	Manage small business finances
CPCCCA3001A	Carry out general demolition of minor building structures
CPCCCA3013A	Install lining, panelling and moulding
CPCCCA3014A	Construct bulkheads
CPCCCA3015A	Assemble partitions
CPCCCM2003B	Calculate and cost construction work
CPCCCM2007B	Use explosive power tools
CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCCCM2010B	Work safely at heights
CPCCCM3001C	Operate elevated work platforms
CPCCCO2013A	Carry out concreting to simple forms
CPCCJN3002A	Use computer-controlled machinery
CPCCJN3003A	Manufacture components for door and window frames and doors
CPCCPB3015A	Install acoustic and thermal environmental protection systems
CPCCSF2003A	Cut and bend materials using oxy-LPG equipment
CPCCSH2003A	Apply and install sealant and sealant devices
CPCCWC3004A	Install suspended ceilings
LMFFM3006B	Install furnishing products
LMFFM3013B	Measure and draw site layout for manufactured furniture products
LMFFM3028B	Fabricate synthetic solid surface products
LMFFM3030B	Set up, operate and maintain CNC sizing machines
LMFFM3031B	Set up, operate and maintain CNC machining and processing centres

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Custom Content Section

Not applicable.

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CPC31912 Certificate III in Joinery

Modification History

Revised qualification deemed equivalent to CPC31912

- elective unit updated:
  - CPCCJN2002A to current equivalent version (CPCCJN2002B Prepare for off-site manufacturing process)
- pathways information added

Description

This qualification provides a trade outcome in joinery covering work for residential and commercial applications.

Occupational titles may include:

- Joiner.

The qualification has core unit of competency requirements that cover common skills for the construction industry, as well as a specialist field of work.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

This qualification is suitable for an Australian Apprenticeship pathway.

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Licensing/Regulatory Information

Check with relevant state and territory licensing and regulatory authorities. State and territory jurisdictions may have different regulatory requirements.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:

Communication	• Communicates with clients, colleagues and others using effective and appropriate communication techniques, including:
	  • Clear and direct communication
	  • Active listening
	  • Verbal and non-verbal language
	  • Questioning to identify and confirm requirements
	  • Language and concepts appropriate to cultural differences
	• Follows instructions from supervisor and other relevant persons
	• Understands, interprets and applies information as required from:
	  • Regulatory, legislative, licensing and organisational requirements
	  • Environmental and WHS requirements, including safety data sheets (SDS)
	  • Codes and standards
	  • Plans and drawings
	  • Specifications
	  • Safety signs and symbols
	  • Organisational policies and procedures
	• Understands relevant definitions, terminology, symbols, abbreviations and language
	• Records relevant information using standard workplace documentation
	• Applies measurements and calculations using appropriate equipment, formulas and records as required
	• Reports and records hazards and risks

Teamwork	• Works as part of a team • Provides assistance and encouragement to other team members • Initiates and encourages improvements in team performance • Identifies and utilises the strengths of other team members • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities • Coordinates and actions tasks • Participates in on-site meetings
Problem solving	• Examines tools and equipment prior to use for damage, missing components or other defects

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- Identifies typical faults and problems and takes necessary remedial action
- Rectifies simple faults with tools and equipment
- Performs routine maintenance as required
- Checks materials and products for conformity to specifications
- Carries out data input adjustments

Initiative and enterprise

- Identifies opportunities to improve resource efficiency and makes suggestions as appropriate
- Responds to change and workplace challenges
- Puts ideas into action
- Maximises use of resources by recycling, re-using or using appropriate disposal methods

Planning and organising

- Identifies hazards and implements appropriate hazard control measures
- Selects and uses appropriate materials, tools and equipment
- Determines material quantity requirements
- Prioritises and sequences tasks
- Applies time management skills to ensure work is completed to time requirements

Self management

- Evaluates own actions and makes judgements about performance and necessary improvements
- Contributes to workplace responsibilities, such as current work site environmental/sustainability frameworks or management systems
- Manages own performance to meet workplace standards
- Seeks support to improve work performance
- Cleans up work area, including tools and equipment

Learning

- Identifies own learning needs and seeks skill development as required
- Is open to learning new ideas and techniques

Technology

- Uses calculators
- Uses and operates a range of tools and equipment correctly and safely including computer-controlled equipment

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Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 30 units of competency:
  - 16 core units
  - 14 elective units.

A maximum of two of the required fourteen elective units may be substituted by selecting relevant units of competency from any Certificate III or IV construction qualification or qualification in another endorsed Training Package.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

CPCCCA2002B	Use carpentry tools and equipment
CPCCCA2011A	Handle carpentry materials
CPCCCM1012A	Work effectively and sustainably in the construction industry
CPCCCM1013A	Plan and organise work
CPCCCM1014A	Conduct workplace communication
CPCCCM1015A	Carry out measurements and calculations
CPCCCM2001A	Read and interpret plans and specifications
CPCCCM2006B	Apply basic levelling procedures
CPCCCM2007B	Use explosive power tools
CPCCCM2010B	Work safely at heights
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Joinery - machining and component manufacture and assembly field of work

CPCCJN3001A	Use static machines
CPCCJN3002A	Use computer-controlled machinery
CPCCJN3003A	Manufacture components for door and window frames and doors
CPCCJN3004A	Manufacture joinery components
CPCCSH3001A	Set out and assemble cabinets, showcases, wall units, counters and workstations

Elective units

Joinery - stairs field of work

CPCCJS3002A	Manufacture stair components for straight flighted stairs
CPCCJS3003A	Assemble and install stairs
CPCCJS3004A	Manufacture and install continuous handrailing and special stair components
CPCCJS3006A	Construct fabricated stairs
CPCCJS3011A	Design and set out stairs

Stair installation field of work

CPCCCA3010A	Install and replace windows and doors
CPCCCA3012A	Frame and fit wet area fixtures
CPCCCA3013A	Install lining, panelling and moulding
CPCCCA3016A	Construct timber external stairs

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General electives

BSBSMB301A	Investigate micro business opportunities
BSBSMB406A	Manage small business finances
CPCCCA3001A	Carry out general demolition of minor building structures
CPCCCA3011A	Refurbish timber sashes to window frames
CPCCCA3014A	Construct bulkheads
CPCCCA3015A	Assemble partitions
CPCCJN2001A	Assemble components
CPCCJN2002B	Prepare for off-site manufacturing process
CPCCJN2003A	Package manufactured products for transport
CPCCJN3005A	Cut and install glass
CPCCPD3021A	Prepare surfaces for painting
CPCCSF2003A	Cut and bend materials using oxy-LPG equipment
CPCCSF2004A	Place and fix reinforcement materials
CPCCSH2003A	Apply and install sealant and sealant devices
CPCCSH3005A	Apply and trim decorative finishes
CPCCSH3006A	Apply finishes
CPCCST2005A	Carry out load slinging of off-site materials

Custom Content Section

Not applicable.

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CPC32011 Certificate III in Carpentry and Joinery

Modification History

Revised qualification deemed equivalent to CPC32011

Description

This qualification provides a trade outcome in carpentry and joinery, covering work in residential and commercial applications.

Occupational titles may include:

- Carpenter and joiner.

The qualification has core unit of competency requirements that cover common skills for the construction industry, as well as two specialist fields of work.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:

Communication	• Communicates with clients, colleagues and others using effective and appropriate communication techniques, including:
	  • clear and direct communication
	  • active listening
	  • verbal and non-verbal language
	  • questioning to identify and confirm requirements
	  • language and concepts appropriate to cultural differences
	  • follows instructions from supervisor and other relevant persons
	• Understands, interprets and applies information as required from:
	  • Regulatory, legislative, licensing and organisational requirements
	  • Environmental and OHS requirements, including material safety data sheets (MSDS)
	  • Codes and standards
	  • Plans and drawings
	  • Specifications
	  • Safety signs and symbols
	  • Organisational policies and procedures
	• Understands relevant definitions, terminology, symbols, abbreviations and language
	• Records relevant information using standard workplace documentation
	• Applies measurements and calculations using appropriate equipment, formulas and records as required
	• Reports and records hazards and risks

Teamwork	• Works as part of a team • Provides assistance and encouragement to other team members • Initiates and encourages improvements in team performance • Identifies and utilises the strengths of other team members • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities • Coordinates and actions tasks • Participates in on-site meetings
Problem solving	• Examines tools and equipment prior to use for damage, missing components or other defects

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	• Identifies typical faults and problems and takes necessary remedial action • Rectifies simple faults with tools and equipment • Performs routine maintenance as required • Checks materials and products for conformity to specifications • Carries out data input adjustments
Initiative and enterprise	• Identifies opportunities to improve resource efficiency and makes suggestions as appropriate • Responds to change and workplace challenges • Puts ideas into action • Maximises use of resources by recycling, re-using or using appropriate disposal methods
Planning and organising	• Identifies hazards and implements appropriate hazard control measures • Selects and uses appropriate materials, tools and equipment • Determines material quantity requirements • Prioritises and sequences tasks • Applies time management skills to ensure work is completed to time requirements
Self management	• Evaluates own actions and makes judgements about performance and necessary improvements • Contributes to workplace responsibilities, such as current work site environmental/sustainability frameworks or management systems • Manages own performance to meet workplace standards • Seeks support to improve work performance • Cleans up work area, including tools and equipment
Learning	• Identifies own learning needs and seeks skill development as required • Is open to learning new ideas and techniques
Technology	• Uses calculators • Uses and operates a range of tools and equipment correctly and safely including computer-controlled equipment

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Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 32 units of competency:
  - 28 core units
  - 4 elective units.

A maximum of two of the four required elective units may be substituted by selecting relevant units of competency from any Certificate III or IV construction qualification or qualification in another endorsed Training Package.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

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CPCCCA2002B	Use carpentry tools and equipment
CPCCCA2011A	Handle carpentry materials
CPCCCA3001A	Carry out general demolition of minor building structures
CPCCCA3002A	Carry out setting out
CPCCCA3010A	Install and replace windows and doors
CPCCCA3013A	Install lining, panelling and moulding
CPCCCA3017B	Install exterior cladding
CPCCCA3019A	Erect and dismantle formwork to suspended slabs, columns, beams and walls
CPCCCA3023A	Carry out levelling operations
CPCCCM1012A	Work effectively and sustainably in the construction industry
CPCCCM1013A	Plan and organise work
CPCCCM1014A	Conduct workplace communication
CPCCCM1015A	Carry out measurements and calculations
CPCCCM2001A	Read and interpret plans and specifications
CPCCCM2007B	Use explosive power tools
CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCCCM2010B	Work safely at heights
CPCCCO2013A	Carry out concreting to simple forms
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Construction and erection of frames, trusses, eaves and roofs field of work

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CPCCCA3003A	Install flooring systems
CPCCCA3004A	Construct wall frames
CPCCCA3005B	Construct ceiling frames
CPCCCA3006B	Erect roof trusses
CPCCCA3007C	Construct pitched roofs
CPCCCA3008B	Construct eaves

Joinery - machining and component manufacture and assembly field of work

CPCCJN3001A	Use static machines
CPCCJN3003A	Manufacture components for door and window frames and doors
CPCCJN3004A	Manufacture joinery components

Elective units

Carpentry installation field of work

CPCCCA3012A	Frame and fit wet area fixtures
CPCCCA3016A	Construct timber external stairs

Joinery - stairs field of work

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CPCCJN3002A	Use computer-controlled machinery
CPCCJS3002A	Manufacture stair components for straight flighted stairs
CPCCJS3003A	Assemble and install stairs
CPCCJS3004A	Manufacture and install continuous handrailing and special stair components
CPCCJS3006A	Construct fabricated stairs
CPCCJS3011A	Design and set out stairs

General electives

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BSBSMB301A	Investigate micro business opportunities
BSBSMB406A	Manage small business finances
CPCCCA3009B	Construct advanced roofs
CPCCCA3011A	Refurbish timber sashes to window frames
CPCCCA3014A	Construct bulkheads
CPCCCA3015A	Assemble partitions
CPCCCA3022A	Install curtain walling
CPCCCM2002A	Carry out excavation
CPCCCM3001C	Operate elevated work platforms
CPCCSF2003A	Cut and bend materials using oxy-LPG equipment
CPCCSF2004A	Place and fix reinforcement materials
CPCCSH2003A	Apply and install sealant and sealant devices
CPCCSH3001A	Set out and assemble cabinets, showcases, wall units, counters and workstations
CPCCWC3003A	Install dry wall passive fire-rated systems
RIICCM210A	Install trench support
RIIOHS202A	Enter and work in confined spaces
RIIWMG203A	Drain and dewater civil construction site

Custom Content Section

Not applicable.

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CPC32111 Certificate III in Signage

Modification History

Revised qualification deemed equivalent to CPC32111
Elective units revised resulting in a number of unit identifier changes
Elective imported unit replaced with updated version
New elective units added:

- CPCCSI3015A
- CPCCSI3016A

Description

This qualification provides a trade outcome in signage.

Occupational titles may include:

- Signwriter
- Sign manufacturer.

The qualification has core unit of competency requirements that cover common skills for the construction industry, as well as a specialist field of work.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:

Communication	• Communicates with clients, colleagues and others using effective and appropriate communication techniques, including:
	  • Clear and direct communication
	  • Active listening
	  • Verbal and non-verbal language
	  • Questioning to identify and confirm requirements
	  • Language and concepts appropriate to cultural differences
	• Follows instructions from supervisor and other relevant persons
	• Understands, interprets and applies information as required from:
	  • Regulatory, legislative, licensing and organisational requirements
	  • Environmental and OHS requirements, including material safety data sheets (MSDS)
	  • Codes and standards
	  • Plans and drawings
	  • Specifications
	  • Safety signs and symbols
	  • Organisational policies and procedures
	  • Client briefs
	  • Designs
	• Understands relevant definitions, terminology, symbols, abbreviations and language
	• Records relevant information using standard workplace documentation
	• Applies measurements and calculations using appropriate equipment, formulas and records as required
	• Reports and records hazards and risks

Teamwork	• Works as part of a team • Provides assistance and encouragement to other team members • Initiates and encourages improvements in team performance • Identifies and utilises the strengths of other team members • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities • Coordinates and actions tasks • Participates in on-site meetings

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Employability skill	Industry/enterprise requirements for this qualification include:
Problem solving	• Examines tools and equipment prior to use for damage, missing components or other defects • Identifies typical faults and problems and takes necessary remedial action • Rectifies simple faults with tools and equipment • Performs routine maintenance as required • Checks materials and products for conformity to specifications
Initiative and enterprise	• Identifies opportunities to improve resource efficiency and makes suggestions as appropriate • Responds to change and workplace challenges • Puts ideas into action • Maximises use of resources by recycling, re-using or using appropriate disposal methods
Planning and organising	• Identifies hazards and implements appropriate hazard control measures • Selects and uses appropriate materials, tools and equipment • Determines material quantity requirements • Prioritises and sequences tasks • Applies time management skills to ensure work is completed to time requirements
Self management	• Evaluates own actions and makes judgements about performance and necessary improvements • Contributes to workplace responsibilities, such as current work site environmental/sustainability frameworks or management systems • Manages own performance to meet workplace standards • Seeks support to improve work performance • Cleans up work area, including tools and equipment
Learning	• Identifies own learning needs and seeks skill development as required • Is open to learning new ideas and techniques
Technology	• Uses calculators • Uses computer system and relevant software including to

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Employability skill	Industry/enterprise requirements for this qualification include:
	produce designs • Uses and operates a range of tools and equipment correctly and safely

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 21 units of competency:
  - 14 core units
  - 7 elective units.

A maximum of two of the required seven elective units may be substituted by selecting relevant units of competency from any Certificate III or IV construction qualification or qualification in another endorsed Training Package.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

CPCCCM1012A	Work effectively and sustainably in the construction industry
CPCCCM1013A	Plan and organise work
CPCCCM1014A	Conduct workplace communication
CPCCCM1015A	Carry out measurements and calculations
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Signage field of work

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CPCCSI2001A	Use colour for signage
CPCCSI2002A	Lay out and design signage
CPCCSI2003A	Prepare surfaces for signage
CPCCSI2004A	Produce digital signage
CPCCSI2005A	Fabricate signage
CPCCSI2006A	Signwrite to simple forms
CPCCSI2007A	Apply fasteners and fixings
CPCCSI3001A	Produce vinyl signage
CPCCSI3002A	Use rotary router

Elective units

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BSBSMB301A	Investigate micro business opportunities
BSBSMB406A	Manage small business finances
CPCCCM2006B	Apply basic levelling procedures
CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCCCM2010B	Work safely at heights
CPCCCM3001C	Operate elevated work platforms
CPCCCM3003A	Work safely around power sources, services and assets
CPCCCO2013A	Carry out concreting to simple forms
CPCCSI3003A	Signwrite to decorative forms
CPCCSI3004A	Apply advanced vinyl applications
CPCCSI3005A	Use engraving systems
CPCCSI3006A	Apply gilding to signage
CPCCSI3007A	Apply lines and scrolls
CPCCSI3008A	Write showcards and chalkboards
CPCCSI3009A	Screen-print signage
CPCCSI3010A	Hand render pictorials
CPCCSI3011A	Use LED technology for signage
CPCCSI3012A	Apply electrical theory for illuminated signage
CPCCSI3013A	Install LED systems
CPCCSI3014A	Manufacture gas-charged glass-formed illuminated signage
CPCCSI3015A	Produce airbrushed signage
CPCCSI3016A	Produce digital signage using advanced software applications
MEM05010C	Apply fabrication, forming and shaping techniques
TLILIC2001A	Licence to operate a forklift truck

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Custom Content Section

Not applicable.

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CPC32211 Certificate III in Joinery (Stairs)

Modification History

Revised qualification deemed equivalent to CPC32211
Core and elective units revised resulting in a number of unit identifier changes
Change to elective unit:
CPCCSH3004A revised but deemed not equivalent to CPCCSH3006A

Description

This qualification provides a trade outcome in stair building and installation, covering work for residential and commercial applications.

Occupational titles may include:

- Stair builder.

The qualification has core unit of competency requirements that cover common skills for the construction industry, as well as a specialist field of work.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:

Communication	• Communicates with clients, colleagues and others using effective and appropriate communication techniques, including:
	  • Clear and direct communication
	  • Active listening
	  • Verbal and non-verbal language
	  • Questioning to identify and confirm requirements
	  • Language and concepts appropriate to cultural differences
	• Follows instructions from supervisor and other relevant persons
	• Understands, interprets and applies information as required from:
	  • Regulatory, legislative, licensing and organisational requirements
	  • Environmental and OHS requirements, including material safety data sheets (MSDS)
	  • Codes and standards
	  • Plans and drawings
	  • Specifications
	  • Safety signs and symbols
	  • Organisational policies and procedures
	• Understands relevant definitions, terminology, symbols, abbreviations and language
	• Records relevant information using standard workplace documentation
	• Applies measurements and calculations using appropriate equipment, formulas and records as required
	• Reports and records hazards and risks

Teamwork	• Works as part of a team • Provides assistance and encouragement to other team members • Initiates and encourages improvements in team performance • Identifies and utilises the strengths of other team members • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities • Coordinates and actions tasks • Participates in on-site meetings
Problem solving	• Examines tools and equipment prior to use for damage, missing components or other defects • Identifies typical faults and problems and takes necessary

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Employability skill	Industry/enterprise requirements for this qualification include:
	remedial action • Rectifies simple faults with tools and equipment • Performs routine maintenance as required • Checks materials and products for conformity to specifications • Carries out data input adjustments
Initiative and enterprise	• Identifies opportunities to improve resource efficiency and makes suggestions as appropriate • Responds to change and workplace challenges • Puts ideas into action • Maximises use of resources by recycling, re-using or using appropriate disposal methods
Planning and organising	• Identifies hazards and implements appropriate hazard control measures • Selects and uses appropriate materials, tools and equipment • Determines material quantity requirements • Prioritises and sequences tasks • Applies time management skills to ensure work is completed to time requirements
Self management	• Evaluates own actions and makes judgements about performance and necessary improvements • Contributes to workplace responsibilities, such as current work site environmental/sustainability frameworks or management systems • Manages own performance to meet workplace standards • Seeks support to improve work performance • Cleans up work area, including tools and equipment
Learning	• Identifies own learning needs and seeks skill development as required • Is open to learning new ideas and techniques
Technology	• Uses calculators • Uses and operates a range of tools and equipment correctly and safely including computer-controlled equipment

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Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 27 units of competency:
  - 18 core units
  - 9 elective units.

A maximum of two of the required nine elective units may be substituted by selecting relevant units of competency from any Certificate III or IV construction qualification or qualification in another endorsed Training Package.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

CPCCCA2002B	Use carpentry tools and equipment
CPCCCA2011A	Handle carpentry materials
CPCCCA3023A	Carry out levelling operations
CPCCCM1012A	Work effectively and sustainably in the construction industry
CPCCCM1013A	Plan and organise work
CPCCCM1014A	Conduct workplace communication
CPCCCM1015A	Carry out measurements and calculations
CPCCCM2001A	Read and interpret plans and specifications
CPCCCM2010B	Work safely at heights
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Joinery - stairs field of work

CPCCJN3001A	Use static machines
CPCCJN3002A	Use computer-controlled machinery
CPCCJS3002A	Manufacture stair components for straight flighted stairs
CPCCJS3003A	Assemble and install stairs
CPCCJS3004A	Manufacture and install continuous handrailing and special stair components
CPCCJS3005A	Manufacture stair components for curved and geometric stairs
CPCCJS3006A	Construct fabricated stairs
CPCCJS3011A	Design and set out stairs

Elective units

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BSBSMB301A	Investigate micro business opportunities
BSBSMB406A	Manage small business finances
CPCCCA3013A	Install lining, panelling and moulding
CPCCCA3015A	Assemble partitions
CPCCCA3016A	Construct timber external stairs
CPCCCM2007B	Use explosive power tools
CPCCCO2013A	Carry out concreting to simple forms
CPCCJN2001A	Assemble components
CPCCJN2003A	Package manufactured products for transport
CPCCJN3005A	Cut and install glass
CPCCPD3021A	Prepare surfaces for painting
CPCCPD3022A	Apply paint by brush and roller
CPCCPD3024A	Apply paint by spray
CPCCSH2002A	Use aluminium sections for fabrication
CPCCSH2003A	Apply and install sealant and sealant devices
CPCCSH3005A	Apply and trim decorative finishes
CPCCSH3006A	Apply finishes
CPCCST2005A	Carry out load slinging of off-site materials

Custom Content Section

Not applicable.

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CPC32313 Certificate III in Stonemasonry (Monumental/Installation)

Modification History

Revised qualification deemed not equivalent to CPC32311
Qualification packaging amended:

- composition of core revised:
  - CPCCCM2005B Use construction tools and equipment added
  - CPCCST2001A Prepare for stonemasonry construction process deleted
  - CPCCST2002A revised resulting in non-equivalent CPCCST2006A Identify and use stone products
  - CPCCST3005A revised resulting in non-equivalent CPCCST3022A Carry out profile work
- minor change to elective packaging wording, without changing intent
- elective unit added:
  - CPCCCM2009A Carry out basic demolition
- 7 new units rewritten and reinstated into elective pool from previous BCF and BCG Training Packages:
  - CPCCST3015A Apply gilding to stone
  - CPCCST3016A Build solid stonemasonry walls
  - CPCCST3017A Construct stone arches
  - CPCCST3018A Inlay lead to stone
  - CPCCST3019A Lay stonemasonry stairs
  - CPCCST3020A Produce reconstituted stone
  - CPCCST3021A Renovate and restore stone work
- pathways information added

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Description

This qualification is designed to meet the needs of stonemasons working with sandstone, limestone, marble and other types of stone and stone products to produce stone monuments, buildings and building components, such as walls, floors, arches, chimneys, stairs, windows, decorative mouldings, fireplaces and benchtops.

Occupational titles may include:

- Construction mason
- Finisher
- Stonemason.

The qualification has core unit of competency requirements that cover common skills for the construction industry, as well as a specialist field of work.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

This qualification is suitable for an Australian Apprenticeship pathway.
Refer to CPSISC website for further career and pathway information:
http://www.cpsisc.com.au/career http://www.cpsisc.com.au/career

Licensing/Regulatory Information

Check with relevant state and territory licensing and regulatory authorities. State and Territory jurisdictions may have different regulatory requirements for work carried out on heritage structures.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification

Communication	• Communicates with clients, colleagues and others using effective and appropriate communication techniques, including:
	  • Clear and direct communication
	  • Active listening
	  • Verbal and non-verbal language
	  • Questioning to identify and confirm requirements
	  • Language and concepts appropriate to cultural differences
	• Follows instructions from supervisor and other relevant persons
	• Understands, interprets and applies information as required from:
	  • Codes and standards
	  • Environmental and work health and safety (WHS) requirements, including safety data sheets (SDS)
	  • Organisational policies and procedures
	  • Plans and drawings
	  • Regulatory, legislative, licensing and organisational requirements
	  • Safety signs and symbols
	  • Specifications
	• Understands relevant definitions, terminology, symbols, abbreviations and language
	• Records relevant information using standard workplace documentation
	• Applies measurements and calculations using appropriate equipment, formulas and records as required
	• Reports and records hazards and risks

Teamwork	• Works as part of a team • Provides assistance and encouragement to other team members • Initiates and encourages improvements in team performance • Identifies and uses the strengths of other team members • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities • Coordinates and actions tasks • Participates in on-site meetings

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Problem solving	• Examines tools and equipment prior to use for damage, missing components or other defects • Identifies typical faults and problems and takes necessary remedial action • Rectifies simple faults with tools and equipment • Performs routine maintenance as required • Checks materials and products for conformity to specifications • Carries out data input adjustments • Manages own performance to meet workplace standards • Seeks support to improve work performance • Cleans up work area, including tools and equipment
Initiative and enterprise	• Identifies opportunities to improve resource efficiency and makes suggestions as appropriate • Responds to change and workplace challenges • Puts ideas into action • Maximises use of resources by recycling, re-using or using appropriate disposal methods
Planning and organising	• Identifies hazards and implements appropriate hazard control measures • Selects and uses appropriate materials, tools and equipment • Determines material quantity requirements • Prioritises and sequences tasks • Applies time management skills to ensure work is completed to time requirements
Self-management	• Evaluates own actions and makes judgements about performance and necessary improvements • Contributes to workplace responsibilities, such as current work site environmental/sustainability frameworks or management systems
Learning	• Identifies own learning needs and seeks skill development as required • Is open to learning new ideas and techniques
Technology	• Uses calculators • Uses and operates a range of tools and equipment correctly and safely

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Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 30 units of competency:
  - 21 core units
  - 9 elective units.

The elective units must ensure the integrity of the AQF alignment and contribute to a valid, industry-supported vocational outcome and are to be chosen as follows:

- 9 units from the elective units listed below
- 2 of the units may be chosen from other Certificate III qualifications in CPC08 or another current Training Package or accredited course.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

CPCCCA3002A	Carry out setting out
CPCCCA3023A	Carry out levelling operations
CPCCCM1012A	Work effectively and sustainably in the construction industry
CPCCCM1013A	Plan and organise work
CPCCCM1014A	Conduct workplace communication
CPCCCM1015A	Carry out measurements and calculations
CPCCCM2001A	Read and interpret plans and specifications
CPCCCM2002A	Carry out excavation
CPCCCM2005B	Use construction tools and equipment
CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCCCO2013A	Carry out concreting to simple forms
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry
CPCCST2003A	Finish stone

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CPCCST2004A	Lay stone
CPCCST2006A	Identify and use stone products
CPCCST3001A	Dress and mould stone
CPCCST3002A	Shape solid stone
CPCCST3003A	Split stone manually
CPCCST3004A	Dress stone manually
CPCCST3006A	Machine stone
CPCCST3022A	Carry out profile work

Elective units

BSBSMB301A	Investigate micro business opportunities
BSBSMB406A	Manage small business finances
CPCCBL3016A	Construct battered masonry walls and piers
CPCCCA3014A	Construct bulkheads
CPCCCM2007B	Use explosive power tools
CPCCCM2009A	Carry out basic demolition
CPCCCM2010B	Work safely at heights
CPCCCM3001C	Operate elevated work platforms
CPCCJN2001A	Assemble components
CPCCJN2003A	Package manufactured products for transport
CPCCPA3001A	Prepare subgrade, base and bedding course for segmental paving
CPCCPA3002A	Lay segmental pavers
CPCCPA3003A	Cut segmental pavers
CPCCST2005A	Carry out load slinging of off-site materials
CPCCST3007A	Turn stone

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CPCCST3009A	Use computer-controlled static machinery to produce stone components
CPCCST3010A	Set out and cut letters in stone
CPCCST3011A	Plan monument construction
CPCCST3012A	Build stone veneer walls
CPCCST3013A	Carry out cemetery monument fixing
CPCCST3014A	Set and anchor stone facades
CPCCST3015A	Apply gilding to stone
CPCCST3016A	Build solid stonemasonry walls
CPCCST3017A	Construct stone arches
CPCCST3018A	Inlay lead to stone
CPCCST3019A	Lay stonemasonry stairs
CPCCST3020A	Produce reconstituted stone
CPCCST3021A	Renovate and restore stone work

Custom Content Section

Not applicable.

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CPC32413 Certificate III in Plumbing

Modification History

Revised qualification deemed not equivalent to CPC32412

Qualification packaging amended:

- core gas unit CPCPGS3058A replaced with non-equivalent unit CPCPGS3061A Install and commission Type A gas appliances
- prerequisite unit to CPCCCM2008B (CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry) added to elective streams where CPCCCM2008B appears
- Water stream elective unit CPCPFS3033A revised to non-equivalent unit CPCPFS3045A Fit off sprinkler heads, controls and ancillary equipment
- imported units for the purpose of ARC licensing added to the Mechanical Services elective stream:
  - UEENEEE101A Apply Occupational Health and Safety regulations, codes and practices in the workplace
  - UEENEEJ102A Prepare and connect refrigerant tubing and fittings
  - UEENEEJ105A Position, assemble and start up single head split air conditioning and water heating heat pump systems
  - UEENEEJ172A Recover, pressure test, evacuate, charge and leak test refrigerants – split systems
- pathways information added

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Description

This qualification provides a trade outcome in plumbing.

Occupational titles may include:

- Plumber
- Plumber and drainer
- Plumber and gasfitter
- Gasfitter
- Roof plumber.

The qualification has core and elective unit of competency requirements that cover common and specialist skills for the plumbing industry in six specialist streams:

- Stream 1 Water
- Stream 2 Sanitary
- Stream 3 Drainage
- Stream 4 Mechanical services
- Stream 5 Roofing
- Stream 6 Gas services.

The plumbing industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

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Pathways Information

This qualification is suitable for an Australian Apprenticeship pathway.

Licensing/Regulatory Information

This is a licensed occupation. Check with relevant state and territory licensing and regulatory authorities. State and territory jurisdictions may have different regulatory requirements.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification

Communication	• Communicates with clients, colleagues and others using effective and appropriate communication techniques, including:
	  • Clear and direct communication
	  • Active listening
	  • Verbal and non-verbal language
	  • Questioning to identify and confirm requirements
	  • Language and concepts appropriate to cultural differences
	• Follows instructions from supervisor and other relevant persons
	• Understands, interprets and applies information as required from:
	  • Regulatory, legislative, licensing and organisational requirements
	  • Environmental and WHS requirements, including safety data sheets (SDS)
	  • Codes and standards
	  • Plans, drawings and specifications
	  • Schedules
	  • Load tables
	  • Designs
	  • Safety signs and symbols
	  • Organisational policies and procedures
	• Understands relevant definitions, terminology, symbols, abbreviations and language
	• Uses industry-accepted visual communications, including hand signals
	• Reports and records routine workplace and regulatory information including test data
	• Applies measurements and calculations using appropriate equipment, formulas and records as required
	• Reports and records hazards and risks

Teamwork	• Works as part of a team • Provides assistance and encouragement to other team members • Initiates and encourages improvements in team performance • Works with others to plan and sequence tasks • Identifies and uses the strengths of other team members

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Employability skill	Industry/enterprise requirements for this qualification
	• Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities • Participates in workplace meetings
Problem solving	• Responds effectively to hazards, risks, emergencies and first aid situations • Examines tools and equipment prior to use for damage, missing components or other defects • Identifies typical faults and problems and takes remedial actions and/or reports to supervisor • Performance tests penetration to ensure correct fit and remedies as required • Rectifies simple faults with tools and equipment • Locates and clears plumbing blockages • Tests systems and services • Calculates water flow rates, ventilation requirements and gas storage capacity • Rectifies incorrect roofing installations • Assesses roof work site safety • Locates and repairs gas leaks
Initiative and enterprise	• Maximises use of resources by recycling, re-using or using appropriate disposal methods • Responds to change and workplace challenges • Designs domestic irrigation systems • Designs and fabricates roof coverings • Determines requirements for heating system installations, roof water storage, medical gas pipeline systems, appliance installations, flue installations, and gas piping system purging
Planning and organising	• Prepares work area • Identifies and obtains necessary documentation • Collects, analyses and organises workplace information • Selects and uses appropriate materials, tools and equipment • Carries out site inspections • Determines material quantity requirements and conformity to requirements • Coordinates delivery of materials • Fabricates, sets out, installs and commissions components,

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Employability skill	Industry/enterprise requirements for this qualification
	equipment and systems • Plans drainage system layouts • Prioritises and sequences tasks • Applies time management skills to ensure work is completed to time requirements
Self management	• Recognises obligations and accepts responsibility for own work and safety • Recognises quality requirements and completes work to expected standard • Identifies personal career development needs and sets own and team work goals • Participates in workplace induction • Cleans up work area, including tools and equipment • Seeks support to improve work performance
Learning	• Identifies own learning needs and seeks skill development as required • Is open to learning new ideas and techniques • Participates in workplace induction
Technology	• Uses electricity and electrical equipment safely • Uses and operates a range of tools and equipment correctly and safely • Properly starts up, operates and shuts down equipment • Identifies technological trends that may affect the plumbing and services sector • Carries out pre- and post-operational checks on tools and equipment • Performs tools, equipment and systems maintenance as required • Installs and adjusts a range of water service and gas controlling and regulating devices, as well as a variety of plumbing related pumps, systems, components and appliances • Installs, tests and maintains fire protection installations and component assemblies, domestic sprinkler systems, heating ventilation, and air conditioning and air cooling systems

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Packaging Rules

Units of competency from a minimum of four of the following six plumbing streams are required for award of this qualification.

Stream 1 Water and Stream 2 Sanitary are mandatory.

The following units of competency are required for award of this qualification:

Stream 1 Water (mandatory): 24 core units and 5 elective units from the water stream

and Stream 2 Sanitary (mandatory): 6 core units and 4 elective units from the sanitary stream.

Plus two of the following four streams:

Stream 3 Drainage: 9 core units and 3 elective units from the drainage stream

Stream 4 Mechanical services: 4 core units and 11 elective units from the mechanical services stream

Stream 5 Roofing: 8 core units and 4 elective units from the roofing stream

Stream 6 Gas services: 12 core units and 5 elective units from the gas services stream

NB: Units of competency achieved in one stream count as credit for the same unit in the core or elective requirements for any other stream.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

Water stream

CPCPCM2039A	Carry out interactive workplace communication
CPCPCM2040A	Read plans and calculate plumbing quantities
CPCPCM2041A	Work effectively in the plumbing and services sector
CPCPCM2043A	Carry out WHS requirements
CPCPCM2045A	Handle and store plumbing materials
CPCPCM2046A	Use plumbing hand and power tools

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CPCPCM2047A	Carry out levelling
CPCPCM2050A	Mark out materials
CPCPCM2052A	Weld using oxy-acetylene equipment
CPCPCM2053A	Weld using manual metal arc welding equipment
CPCPCM2054A	Carry out simple concreting and rendering
CPCPCM2055A	Work safely on roofs
CPCPCM3021A	Flash penetrations through roofs and walls
CPCPCM3022A	Weld polyethylene and polypropylene pipes using fusion method
CPCPCM3023A	Fabricate and install non-ferrous pressure piping
CPCPFS3031A	Fabricate and install fire hydrant and hose reel systems
CPCPWT3020A	Connect and install storage tanks to a domestic water supply
CPCPWT3021A	Set out and install water services
CPCPWT3022A	Install and adjust water service controls and devices
CPCPWT3023A	Install and commission water heating systems
CPCPWT3025A	Install water pumpsets
CPCPWT3026A	Fit off and commission heated and cold water services
CPCPWT3027A	Connect irrigation systems from drinking water supply
HLTFA211A	Provide basic emergency life support

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Sanitary stream

CPCPCM2048A	Cut and join sheet metal
CPCPDR2021A	Locate and clear blockages
CPCPSN3011B	Plan layout of a residential sanitary plumbing system
CPCPSN3022A	Install discharge pipes
CPCPSN3023A	Fabricate and install sanitary stacks
CPCPSN3024A	Install and fit off sanitary fixtures

Drainage stream

CPCPDR2021A	Locate and clear blockages
CPCPDR2022A	Install domestic treatment plants
CPCPDR2024A	Install stormwater and sub-soil drainage systems
CPCPDR2025A	Drain work site
CPCPDR2026A	Install prefabricated inspection openings and enclosures
CPCPDR3021A	Plan layout of a residential sanitary drainage system
CPCPDR3022A	Install below ground sanitary drainage systems
CPCPDR3023A	Install on-site disposal systems
RIICCM210A	Install trench support

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Mechanical services stream

CPCPCM2048A	Cut and join sheet metal
CPCPMS2021A	Assemble mechanical services components
CPCPMS3031A	Fabricate and install steel pressure piping
CPCPMS3033A	Install small bore heating systems

Roofing stream

CPCPCM2048A	Cut and join sheet metal
CPCPRF2022A	Select and install roof sheeting and wall cladding
CPCPRF2023A	Collect and store roof water
CPCPRF3021A	Receive roofing materials
CPCPRF3022A	Fabricate and install roof drainage components
CPCPRF3023A	Fabricate and install external flashings
CPCPRF3024A	Install roof components
CPCPRF3026A	Install composite roof systems

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Gas services stream

CPCPCM2048A	Cut and join sheet metal
CPCPGS3046A	Install LPG systems in caravans, mobile homes and mobile workplaces
CPCPGS3047A	Install LPG systems in marine craft
CPCPGS3048A	Install gas pressure control equipment
CPCPGS3049A	Install Type A gas appliance flues
CPCPGS3051A	Purge consumer piping
CPCPGS3053A	Disconnect and reconnect Type A gas appliances
CPCPGS3054A	Calculate and install natural ventilation for Type A gas appliances
CPCPGS3056A	Install gas piping systems
CPCPGS3057A	Size consumer gas piping systems
CPCPGS3059A	Install LPG storage of aggregate storage capacity up to 500 litres
CPCPGS3061A	Install and commission Type A gas appliances

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Elective units

Water stream

AHCIRG306A	Troubleshoot irrigation systems
CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCCCM2010B	Work safely at heights
CPCCCM3001C	Operate elevated work platforms
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry
CPCCPB3015A	Install acoustic and thermal environmental protection systems
CPCCRI3001A	Operate personnel and materials hoists
CPCCST2005A	Carry out load slinging of off-site materials
CPCPCM2048A	Cut and join sheet metal
CPCPCM2049A	Cut using oxy-LPG-acetylene equipment
CPCPFS2022A	Install portable fire equipment
CPCPFS3034A	Install control valve assemblies, actuating devices and local alarms
CPCPFS3037A	Install domestic and residential life safety sprinkler systems
CPCPFS3038A	Test and maintain fire hydrant and hose reel installations
CPCPFS3045A	Fit off sprinkler heads, controls and ancillary equipment
CPCPIG2021A	Design domestic urban irrigation systems
CPCPIG3021A	Set out, install and commission irrigation systems
CPCPIG3022A	Install and commission domestic irrigation pumps
CPCPMS3031A	Fabricate and install steel pressure piping
CPCPMS3032A	Select and fit insulation and sheathing
CPCPMS3033A	Install small bore heating systems
CPCPMS3040A	Install and maintain evaporative air cooling systems

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CPCPRF2023A	Collect and store roof water
CPCPWT3024A	Install and maintain domestic water treatment equipment
CPCPWT3028A	Install water services
CPCPWT3029A	Install water pipe systems
CPCPWT3030A	Install home fire sprinkler systems
RIICCM210A	Install trench support
MEM05049B	Perform routine gas tungsten arc welding
MEM05050B	Perform routine gas metal arc welding

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Sanitary stream

CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCCCM2010B	Work safely at heights
CPCCCM3001C	Operate elevated work platforms
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry
CPCCPB3015A	Install acoustic and thermal environmental protection systems
CPCCRI3001A	Operate personnel and materials hoists
CPCCST2005A	Carry out load slinging of off-site materials
CPCPCM2049A	Cut using oxy-LPG-acetylene equipment
CPCPDR2022A	Install domestic treatment plants
CPCPDR2023A	Maintain effluent disinfection systems
CPCPDR2024A	Install stormwater and sub-soil drainage systems
CPCPDR2025A	Drain work site
CPCPDR2026A	Install prefabricated inspection openings and enclosures
CPCPDR3022A	Install below ground sanitary drainage systems
CPCPDR3023A	Install on-site disposal systems
CPCPMS3032A	Select and fit insulation and sheathing
CPCPSN3025A	Install pre-treatment facilities
CPCPSN3026A	Install sewerage pumpsets
RIICCM210A	Install trench support

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Drainage stream

CPCCST2005A	Carry out load slinging of off-site materials
CPCPCM2048A	Cut and join sheet metal
CPCPCM2049A	Cut using oxy-LPG-acetylene equipment
CPCPDR2023A	Maintain effluent disinfection systems
CPCPSN3025A	Install pre-treatment facilities
CPCPWT3029A	Install water pipe systems

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Mechanical services stream

CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCCCM2010B	Work safely at heights
CPCCCM3001C	Operate elevated work platforms
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry
CPCCPB3015A	Install acoustic and thermal environmental protection systems
CPCCRI3001A	Operate personnel and materials hoists
CPCCST2005A	Carry out load slinging of off-site materials
CPCPCM2049A	Cut using oxy-LPG-acetylene equipment
CPCPMS3032A	Select and fit insulation and sheathing
CPCPMS3034A	Install medical gas pipeline systems
CPCPMS3035A	Install and test ducting systems
CPCPMS3036A	Install air handling units
CPCPMS3037A	Install and test split system air conditioning
CPCPMS3038A	Install air conditioning control equipment
CPCPMS3039A	Maintain mechanical services equipment
CPCPMS3040A	Install and maintain evaporative air cooling systems
CPCPMS3041A	Install domestic solid fuel burning appliances
CPCPRF3023A	Fabricate and install external flashings
MEM05049B	Perform routine gas tungsten arc welding
MEM05050B	Perform routine gas metal arc welding
MEM10009B	Install refrigeration and air conditioning plant and equipment
MEM10010B	Install pipework and pipework assemblies
MEM18086B	Test, recover, evacuate and charge refrigeration systems

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RIICCM210A	Install trench support
UEENEEE101A	Apply Occupational Health and Safety regulations, codes and practices in the workplace
UEENEEJ102A	Prepare and connect refrigerant tubing and fittings
UEENEEJ105A	Position, assemble and start up single head split air conditioning and water heating heat pump systems
UEENEEJ172A	Recover, pressure test, evacuate, charge and leak test refrigerants – split systems

Roofing stream

CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCCCM2010B	Work safely at heights
CPCCCM3001C	Operate elevated work platforms
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry
CPCCPB3015A	Install acoustic and thermal environmental protection systems
CPCCRI3001A	Operate personnel and materials hoists
CPCCST2005A	Carry out load slinging of off-site materials
CPCPCM2049A	Cut using oxy-LPG-acetylene equipment
CPCPRF2024A	Fabricate roof coverings for curved structures
CPCPRF3025A	Install roof coverings to curved roof structures
MEM05049B	Perform routine gas tungsten arc welding
MEM05050B	Perform routine gas metal arc welding
RIICCM210A	Install trench support

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Gas services stream

CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCCCM2010B	Work safely at heights
CPCCCM3001C	Operate elevated work platforms
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry
CPCCRI3001A	Operate personnel and materials hoists
CPCCST2005A	Carry out load slinging of off-site materials
CPCPCM2049A	Cut using oxy-LPG-acetylene equipment
CPCPGS3050A	Install Type B gas appliance flues
CPCPGS3052A	Maintain Type A gas appliances
CPCPGS3055A	Install gas sub-meters
CPCPGS3060A	Install LPG storage of aggregate storage capacity exceeding 500 litres and less than 8KL
CPCPMS2021A	Assemble mechanical services components
CPCPMS3031A	Fabricate and install steel pressure piping
CPCPMS3033A	Install small bore heating systems
CPCPMS3035A	Install and test ducting systems
CPCPMS3036A	Install air handling units
MEM05049B	Perform routine gas tungsten arc welding
MEM05050B	Perform routine gas metal arc welding
RIICCM210A	Install trench support

Custom Content Section

Not applicable.

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CPC32513 Certificate III in Plumbing (Mechanical Services)

Modification History

Revised qualification deemed not equivalent to CPC32512

Qualification packaging amended:

- Water stream core requirements changed from 23 to 24 and Water stream elective requirements changed from 7 to 5 (to align to Water stream requirements in CPC32413)
- Gas services stream core unit CPCPGS3058A revised to non-equivalent CPCPGS3061A Install and commission Type A gas appliances
- CPCPWT3020A Connect and install storage tanks to a domestic water supply added as a core unit in Water stream
- CPCPFS2021A Connect static storage tanks for fixed fire protection systems deleted from Water stream electives
- Water stream elective unit CPCPFS3033A revised and recoded to CPCPFS3045A Fit off sprinkler heads, controls and ancillary equipment
- prerequisite unit to CPCCCM2008B (CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry) added to elective streams where CPCCCM2008B appears
- imported units for the purpose of ARC licensing added to the Mechanical Services elective stream:
  - UEENEEE101A Apply Occupational Health and Safety regulations, codes and practices in the workplace
  - UEENEEJ102A Prepare and connect refrigerant tubing and fittings
  - UEENEEJ105A Position, assemble and start up single head split air conditioning and water heating heat pump systems
  - UEENEEJ172A Recover, pressure test, evacuate, charge and leak test refrigerants – split systems
- pathways information added

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Description

This qualification provides a trade outcome in plumbing, specialising in mechanical services.

Occupational titles may include:

- Plumber.

The qualification has core and elective unit of competency requirements that cover mechanical services specialist skills and common and other specialist skills for the plumbing industry.

The qualification has options from six specialist streams:

Stream 1 Mechanical services

Stream 2 Water

Stream 3 Sanitary

Stream 4 Drainage

Stream 5 Roofing

Stream 6 Gas services.

The plumbing industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

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Pathways Information

This qualification is suitable for an Australian Apprenticeship pathway.

Licensing/Regulatory Information

This is a licensed occupation. Check with relevant state and territory licensing and regulatory authorities. State and territory jurisdictions may have different regulatory requirements.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification

Communication	• Communicates with clients, colleagues and others using effective and appropriate communication techniques, including:
	  • Clear and direct communication
	  • Active listening
	  • Verbal and non-verbal language
	  • Questioning to identify and confirm requirements
	  • Language and concepts appropriate to cultural differences
	• Follows instructions from supervisor and other relevant persons
	• Understands, interprets and applies information as required from:
	  • Regulatory, legislative, licensing and organisational requirements
	  • Environmental and WHS requirements, including safety data sheets (SDS)
	  • Codes and standards
	  • Plans, drawings and specifications
	  • Schedules
	  • Load tables
	  • Designs
	  • Safety signs and symbols
	  • Organisational policies and procedures
	• Understands relevant definitions, terminology, symbols, abbreviations and language
	• Uses industry-accepted visual communications, including hand signals
	• Reports and records routine workplace and regulatory information including test data
	• Applies measurements and calculations using appropriate equipment, formulas and records as required
	• Reports and records hazards and risks

Teamwork	• Works as part of a team • Provides assistance and encouragement to other team members • Initiates and encourages improvements in team performance • Works with others to plan and sequence tasks • Identifies and uses the strengths of other team members • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities

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- Participates in workplace meetings

Problem solving

- Responds effectively to hazards, risks, emergencies and first aid situations
- Examines tools and equipment prior to use for damage, missing components or other defects
- Identifies typical faults and problems and takes remedial actions and/or reports to supervisor
- Performance tests penetration to ensure correct fit and remedies as required
- Rectifies simple faults with tools and equipment
- Locates and clears plumbing blockages
- Tests systems and services
- Calculates water flow rates, ventilation requirements and gas storage capacity
- Rectifies incorrect roofing installations
- Assesses roof work site safety
- Locates and repairs gas leaks

Initiative and enterprise

- Maximises use of resources by recycling, re-using or using appropriate disposal methods
- Responds to change and workplace challenges
- Designs domestic irrigation systems
- Designs and fabricates roof coverings
- Determines requirements for heating system installations, roof water storage, medical gas pipeline systems, appliance installations, flue installations and gas piping system purging

Planning and organising

- Prepares work area
- Identifies and obtains necessary documentation
- Collects, analyses and organises workplace information
- Selects and uses appropriate materials, tools and equipment
- Carries out site inspections
- Determines material quantity requirements and conformity to requirements
- Coordinates delivery of materials
- Fabricates, sets out, installs and commissions components, equipment and systems
- Plans drainage system layouts
- Prioritises and sequences tasks
- Applies time management skills to ensure work is completed to time requirements

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Self management

- Recognises obligations and accepts responsibility for own work and safety
- Recognises quality requirements and completes work to expected standard
- Identifies personal career development needs and sets own and team work goals
- Participates in workplace induction
- Cleans up work area, including tools and equipment
- Seeks support to improve work performance

Learning

- Identifies own learning needs and seeks skill development as required
- Is open to learning new ideas and techniques
- Participates in workplace induction

Technology

- Uses electricity and electrical equipment safely
- Uses and operates a range of tools and equipment correctly and safely
- Properly starts up, operates and shuts down equipment
- Identifies technological trends that may affect the plumbing and services sector
- Carries out pre- and post-operational checks on tools and equipment
- Performs tools, equipment and systems maintenance as required
- Installs and adjusts a range of water service and gas controlling and regulating devices, as well as a variety of plumbing related pumps, systems, components and appliances
- Installs, tests and maintains fire protection installations and component assemblies, domestic sprinkler systems, heating ventilation, and air conditioning and air cooling systems

Packaging Rules

Units of competency from a minimum of four of the following six plumbing streams are required for award of this qualification.

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Stream 1 Mechanical services and Stream 2 Water are mandatory.

The following units of competency are required for award of this qualification:

Stream 1 Mechanical services (mandatory): 4 core units and 11 elective units from the mechanical services stream

and

Stream 2 Water (mandatory): 24 core units and 5 elective units from the water stream.

Plus two of the following four streams: Stream 3 Sanitary: 6 core units and 4 elective units from the sanitary stream

Stream 4 Drainage: 9 core units and 3 elective units from the drainage stream

Stream 5 Roofing: 8 core units and 4 elective units from the roofing stream

Stream 6 Gas services: 12 core units and 5 elective units from the gas services stream

NB: Units of competency achieved in one stream count as credit for the same unit in the core or elective requirements for any other stream.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

Mechanical services stream

CPCPCM2048A	Cut and join sheet metal
CPCPMS2021A	Assemble mechanical services components
CPCPMS3031A	Fabricate and install steel pressure piping
CPCPMS3033A	Install small bore heating systems

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Water stream

CPCPCM2039A	Carry out interactive workplace communication
CPCPCM2040A	Read plans and calculate plumbing quantities
CPCPCM2041A	Work effectively in the plumbing and services sector
CPCPCM2043A	Carry out WHS requirements
CPCPCM2045A	Handle and store plumbing materials
CPCPCM2046A	Use plumbing hand and power tools
CPCPCM2047A	Carry out levelling
CPCPCM2050A	Mark out materials
CPCPCM2052A	Weld using oxy-acetylene equipment
CPCPCM2053A	Weld using manual metal arc welding equipment
CPCPCM2054A	Carry out simple concreting and rendering
CPCPCM2055A	Work safely on roofs
CPCPCM3021A	Flash penetrations through roofs and walls
CPCPCM3022A	Weld polyethylene and polypropylene pipes using fusion method
CPCPCM3023A	Fabricate and install non-ferrous pressure piping
CPCPFS3031A	Fabricate and install fire hydrant and hose reel systems
CPCPWT3020A	Connect and install storage tanks to a domestic water supply
CPCPWT3021A	Set out and install water services
CPCPWT3022A	Install and adjust water service controls and devices
CPCPWT3023A	Install and commission water heating systems
CPCPWT3025A	Install water pumpsets
CPCPWT3026A	Fit off and commission heated and cold water services
CPCPWT3027A	Connect irrigation systems from drinking water supply

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HLTFA211A	Provide basic emergency life support

Sanitary stream

CPCPCM2048A	Cut and join sheet metal
CPCPDR2021A	Locate and clear blockages
CPCPSN3011B	Plan layout of a residential sanitary plumbing system
CPCPSN3022A	Install discharge pipes
CPCPSN3023A	Fabricate and install sanitary stacks
CPCPSN3024A	Install and fit off sanitary fixtures

Drainage stream

CPCPDR2021A	Locate and clear blockages
CPCPDR2022A	Install domestic treatment plants
CPCPDR2024A	Install stormwater and sub-soil drainage systems
CPCPDR2025A	Drain work site
CPCPDR2026A	Install prefabricated inspection openings and enclosures
CPCPDR3021A	Plan layout of a residential sanitary drainage system
CPCPDR3022A	Install below ground sanitary drainage systems
CPCPDR3023A	Install on-site disposal systems
RIICCM210A	Install trench support

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Roofing stream

CPCPCM2048A	Cut and join sheet metal
CPCPRF2022A	Select and install roof sheeting and wall cladding
CPCPRF2023A	Collect and store roof water
CPCPRF3021A	Receive roofing materials
CPCPRF3022A	Fabricate and install roof drainage components
CPCPRF3023A	Fabricate and install external flashings
CPCPRF3024A	Install roof components
CPCPRF3026A	Install composite roof systems

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Gas services stream

CPCPCM2048A	Cut and join sheet metal
CPCPGS3046A	Install LPG systems in caravans, mobile homes and mobile workplaces
CPCPGS3047A	Install LPG systems in marine craft
CPCPGS3048A	Install gas pressure control equipment
CPCPGS3049A	Install Type A gas appliance flues
CPCPGS3051A	Purge consumer piping
CPCPGS3053A	Disconnect and reconnect Type A gas appliances
CPCPGS3054A	Calculate and install natural ventilation for Type A gas appliances
CPCPGS3056A	Install gas piping systems
CPCPGS3057A	Size consumer gas piping systems
CPCPGS3059A	Install LPG storage of aggregate storage capacity up to 500 litres
CPCPGS3061A	Install and commission Type A gas appliances

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Elective units

Mechanical services stream

CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCCCM2010B	Work safely at heights
CPCCCM3001C	Operate elevated work platforms
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry
CPCCPB3015A	Install acoustic and thermal environmental protection systems
CPCCRI3001A	Operate personnel and materials hoists
CPCCST2005A	Carry out load slinging of off-site materials
CPCPCM2049A	Cut using oxy-LPG-acetylene equipment
CPCPMS3032A	Select and fit insulation and sheathing
CPCPMS3034A	Install medical gas pipeline systems
CPCPMS3035A	Install and test ducting systems
CPCPMS3036A	Install air handling units
CPCPMS3037A	Install and test split system air conditioning
CPCPMS3038A	Install air conditioning control equipment
CPCPMS3039A	Maintain mechanical services equipment
CPCPMS3040A	Install and maintain evaporative air cooling systems
CPCPMS3041A	Install domestic solid fuel burning appliances
CPCPRF3023A	Fabricate and install external flashings
MEM05049B	Perform routine gas tungsten arc welding
MEM05050B	Perform routine gas metal arc welding
MEM10009B	Install refrigeration and air conditioning plant and equipment
MEM10010B	Install pipework and pipework assemblies

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MEM18086B	Test, recover, evacuate and charge refrigeration systems
RIICCM210A	Install trench support
UEENEEE101A	Apply Occupational Health and Safety regulations, codes and practices in the workplace
UEENEEJ102A	Prepare and connect refrigerant tubing and fittings
UEENEEJ105A	Position, assemble and start up single head split air conditioning and water heating heat pump systems
UEENEEJ172A	Recover, pressure test, evacuate, charge and leak test refrigerants – split systems

Water stream

AHCIRG306A	Troubleshoot irrigation systems
CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCCCM2010B	Work safely at heights
CPCCCM3001C	Operate elevated work platforms
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry
CPCCPB3015A	Install acoustic and thermal environmental protection systems
CPCCRI3001A	Operate personnel and materials hoists
CPCCST2005A	Carry out load slinging of off-site materials
CPCPCM2048A	Cut and join sheet metal
CPCPCM2049A	Cut using oxy-LPG-acetylene equipment
CPCPFS2022A	Install portable fire equipment
CPCPFS3034A	Install control valve assemblies, actuating devices and local alarms
CPCPFS3037A	Install domestic and residential life safety sprinkler systems
CPCPFS3038A	Test and maintain fire hydrant and hose reel installations

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CPCPFS3045A	Fit off sprinkler heads, controls and ancillary equipment
CPCPIG2021A	Design domestic urban irrigation systems
CPCPIG3021A	Set out, install and commission irrigation systems
CPCPIG3022A	Install and commission domestic irrigation pumps
CPCPMS3031A	Fabricate and install steel pressure piping
CPCPMS3032A	Select and fit insulation and sheathing
CPCPMS3033A	Install small bore heating systems
CPCPMS3040A	Install and maintain evaporative air cooling systems
CPCPRF2023A	Collect and store roof water
CPCPWT3024A	Install and maintain domestic water treatment equipment
CPCPWT3028A	Install water services
CPCPWT3029A	Install water pipe systems
CPCPWT3030A	Install home fire sprinkler systems
MEM05049B	Perform routine gas tungsten arc welding
MEM05050B	Perform routine gas metal arc welding
RIICCM210A	Install trench support

Sanitary stream

CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCCCM2010B	Work safely at heights
CPCCCM3001C	Operate elevated work platforms
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry
CPCCPB3015A	Install acoustic and thermal environmental protection systems
CPCCRI3001A	Operate personnel and materials hoists
CPCCST2005A	Carry out load slinging of off-site materials

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CPCPCM2049A	Cut using oxy-LPG-acetylene equipment
CPCPDR2022A	Install domestic treatment plants
CPCPDR2023A	Maintain effluent disinfection systems
CPCPDR2024A	Install stormwater and sub-soil drainage systems
CPCPDR2025A	Drain work site
CPCPDR2026A	Install prefabricated inspection openings and enclosures
CPCPDR3022A	Install below ground sanitary drainage systems
CPCPDR3023A	Install on-site disposal systems
CPCPMS3032A	Select and fit insulation and sheathing
CPCPSN3025A	Install pre-treatment facilities
CPCPSN3026A	Install sewerage pumpsets
RIICCM210A	Install trench support

Drainage stream

CPCCST2005A	Carry out load slinging of off-site materials
CPCPCM2048A	Cut and join sheet metal
CPCPCM2049A	Cut using oxy-LPG-acetylene equipment
CPCPDR2023A	Maintain effluent disinfection systems
CPCPSN3025A	Install pre-treatment facilities
CPCPWT3029A	Install water pipe systems

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Roofing stream

CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCCCM2010B	Work safely at heights
CPCCCM3001C	Operate elevated work platforms
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry
CPCCPB3015A	Install acoustic and thermal environmental protection systems
CPCCRI3001A	Operate personnel and materials hoists
CPCCST2005A	Carry out load slinging of off-site materials
CPCPCM2049A	Cut using oxy-LPG-acetylene equipment
CPCPRF2024A	Fabricate roof coverings for curved structures
CPCPRF3025A	Install roof coverings to curved roof structures
MEM05049B	Perform routine gas tungsten arc welding
MEM05050B	Perform routine gas metal arc welding
RIICCM210A	Install trench support

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Gas services stream

CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCCCM2010B	Work safely at heights
CPCCCM3001C	Operate elevated work platforms
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry
CPCCRI3001A	Operate personnel and materials hoists
CPCCST2005A	Carry out load slinging of off-site materials
CPCPCM2049A	Cut using oxy-LPG-acetylene equipment
CPCPGS3050A	Install Type B gas appliance flues
CPCPGS3052A	Maintain Type A gas appliances
CPCPGS3055A	Install gas sub-meters
CPCPGS3060A	Install LPG storage of aggregate storage capacity exceeding 500 litres and less than 8KL
CPCPMS2021A	Assemble mechanical services components
CPCPMS3031A	Fabricate and install steel pressure piping
CPCPMS3033A	Install small bore heating systems
CPCPMS3035A	Install and test ducting systems
CPCPMS3036A	Install air handling units
MEM05049B	Perform routine gas tungsten arc welding
MEM05050B	Perform routine gas metal arc welding
RIICCM210A	Install trench support

Custom Content Section

Not applicable.

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CPC32612 Certificate III in Roof Plumbing

Modification History

Revised qualification deemed not equivalent to CPC32611
Change to core units:

- a number of units replaced with updated versions
- a number of units revised resulting in unit identifier changes
- CPCPCM2011A replaced with imported unit HLTFA211A
- Change to elective units:
- a number of units replaced with updated versions

Description

This qualification provides a trade outcome in roof plumbing.

Occupational titles may include:

- Roof plumber.

The qualification has core and elective unit of competency requirements that cover some common skills for the plumbing industry, as well as roof plumbing specialist units of competency.

The plumbing industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

Not applicable.

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Licensing/Regulatory Information

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:

Communication	• Communicates with clients, colleagues and others using effective and appropriate communication techniques, including:
	  • Clear and direct communication
	  • Active listening
	  • Verbal and non-verbal language
	  • Questioning to identify and confirm requirements
	  • Language and concepts appropriate to cultural differences
	• Follows instructions from supervisor and other relevant persons
	• Understands, interprets and applies information as required from:
	  • Regulatory, legislative, licensing and organisational requirements
	  • Environmental and OHS requirements, including material safety data sheets (MSDS)
	  • Codes and standards
	  • Plans, drawings and specifications
	  • Schedules
	  • Load tables
	  • Designs
	  • Safety signs and symbols
	  • Organisational policies and procedures
	• Understands relevant definitions, terminology, symbols, abbreviations and language
	• Uses industry-accepted visual communications, including hand signals
	• Reports and records routine workplace and regulatory information
	• Applies measurements and calculations using appropriate equipment, formulas and records as required
	• Reports and records hazards and risks
	• Produce drawings and sketches

Teamwork	• Works as part of a team • Provides assistance and encouragement to other team members • Initiates and encourages improvements in team performance • Works with others to plan and sequence tasks • Identifies and utilises the strengths of other team members • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities • Participates in workplace meetings

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Employability skill	Industry/enterprise requirements for this qualification include:
Problem solving	• Responds effectively to hazards, risks, emergencies and first aid situations • Examines tools and equipment prior to use for damage, missing components or other defects • Identifies typical faults and problems and takes remedial actions and/or reports to supervisor • Rectifies simple faults with tools and equipment • Locates and clears plumbing blockages • Test systems and components • Rectifies incorrect roofing installations • Assesses roof work site safety
Initiative and enterprise	• Maximises use of resources by recycling, re-using or using appropriate disposal methods • Responds to change and workplace challenges • Designs and fabricates roof coverings • Determines requirements for roof water storage
Planning and organising	• Prepares work area • Identifies and obtains necessary documentation • Collects, analyses and organises workplace information • Selects and uses appropriate materials, tools and equipment • Carries out site inspections • Determines material quantity requirements and conformity to requirements • Coordinates delivery of materials • Determines installation requirements • Fabricates, sets outs and installs metal roofing and cladding components and systems and pipe systems • Installs and operates drainage systems • Prioritises and sequences tasks • Applies time management skills to ensure work is completed to time requirements
Self management	• Recognises obligations and accepts responsibility for own work and safety • Recognises quality requirements and completes work to expected standard

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Employability skill	Industry/enterprise requirements for this qualification include:
	• Identifies personal career development needs and sets own and team work goals • Participates in workplace induction • Cleans up work area, including tools and equipment • Seeks support to improve work performance
Learning	• Identifies own learning needs and seeks skill development as required • Is open to learning new ideas and techniques • Participates in workplace induction
Technology	• Uses electricity and electrical equipment safely • Uses and operates a range of tools and equipment correctly and safely • Properly starts up, operates and shuts down equipment • Identifies technological trends that may affect the plumbing and services sector • Carries out pre- and post-operational checks on tools and equipment • Performs tool and equipment maintenance as required

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 25 units of competency:
  - 22 core units
  - 3 elective units.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core

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CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCCCM2010B	Work safely at heights
CPCCCM3001C	Operate elevated work platforms
CPCPCM2039A	Carry out interactive workplace communication
CPCPCM2040A	Read plans and calculate plumbing quantities
CPCPCM2041A	Work effectively in the plumbing and services sector
CPCPCM2043A	Carry out WHS requirements
CPCPCM2045A	Handle and store plumbing materials
CPCPCM2046A	Use plumbing hand and power tools
CPCPCM2047A	Carry out levelling
CPCPCM2048A	Cut and join sheet metal
CPCPCM2050A	Mark out materials
CPCPCM2055A	Work safely on roofs
CPCPCM3021A	Flash penetrations through roofs and walls
CPCPRF2022A	Select and install roof sheeting and wall cladding
CPCPRF3021A	Receive roofing materials
CPCPRF3022A	Fabricate and install roof drainage components
CPCPRF3023A	Fabricate and install external flashings
CPCPRF3024A	Install roof components
CPCPRF3025A	Install roof coverings to curved roof structures
CPCPRF3026A	Install composite roof systems
HLTFA211A	Provide basic emergency life support

Elective units

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CPCCPB3015A	Install acoustic and thermal environmental protection systems
CPCCRI3001A	Operate personnel and materials hoists
CPCCST2005A	Carry out load slinging of off-site materials
CPCPCM2049A	Cut using oxy-LPG-acetylene equipment
CPCPCM2052A	Weld using oxy-acetylene equipment
CPCPCM2053A	Weld using manual metal arc welding equipment
CPCPCM2054A	Carry out simple concreting and rendering
CPCPCM3022A	Weld polyethylene and polypropylene pipes using fusion method
CPCPCM3023A	Fabricate and install non-ferrous pressure piping
CPCPDR2021A	Locate and clear blockages
CPCPDR2024A	Install stormwater and sub-soil drainage systems
CPCPDR2025A	Drain work site
CPCPDR2026A	Install prefabricated inspection openings and enclosures
CPCPMS3032A	Select and fit insulation and sheathing
CPCPRF2023A	Collect and store roof water
CPCPRF2024A	Fabricate roof coverings for curved structures
MEM05049B	Perform routine gas tungsten arc welding
MEM05050B	Perform routine gas metal arc welding
RIICCM210A	Install trench support

Custom Content Section

Not applicable.

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CPC32713 Certificate III in Gas Fitting

Modification History

Revised qualification deemed not equivalent to CPC32712

- core unit CPCPGS3061A Install and commission Type A gas appliances revised, replacing non-equivalent CPCPGS3058A
- prerequisite unit to CPCCCM2008B (CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry) added to elective list
- pathways information added

Description

This qualification provides a trade outcome in gas fitting.

Occupational titles may include:

- Gas fitter.

The qualification has core and elective unit of competency requirements that cover some common skills for the plumbing industry, as well as gas fitting specialist units of competency.

The plumbing industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

This qualification is suitable for an Australian Apprenticeship pathway.

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Licensing/Regulatory Information

This is a licensed occupation. Check with relevant state and territory licensing and regulatory authorities. State and territory jurisdictions may have different regulatory requirements.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification

Communication	• Communicates with clients, colleagues and others using effective and appropriate communication techniques, including:
	  • Clear and direct communication
	  • Active listening
	  • Verbal and non-verbal language
	  • Questioning to identify and confirm requirements
	  • Language and concepts appropriate to cultural differences
	• Follows instructions from supervisor and other relevant persons
	• Understands, interprets and applies information as required from:
	  • Regulatory, legislative, licensing and organisational requirements
	  • Environmental and WHS requirements, including safety data sheets (SDS)
	  • Codes and standards
	  • Plans, drawings and specifications
	  • Schedules
	  • Load tables
	  • Designs
	  • Safety signs and symbols
	  • Organisational policies and procedures
	• Understands relevant definitions, terminology, symbols, abbreviations and language
	• Uses industry-accepted visual communications, including hand signals
	• Reports and records routine workplace and regulatory information including test data
	• Applies measurements and calculations using appropriate equipment, formulas and records as required
	• Reports and records hazards and risks
	• Produces drawings and sketches

Teamwork	• Works as part of a team • Provides assistance and encouragement to other team members • Initiates and encourages improvements in team performance • Works with others to plan and sequence tasks

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- Identifies and uses the strengths of other team members
- Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities
- Participates in workplace meetings

Problem solving

- Responds effectively to hazards, risks, emergencies and first aid situations
- Examines tools and equipment prior to use for damage, missing components or other defects
- Identifies typical faults and problems and takes remedial actions and/or reports to supervisor
- Rectifies simple faults with tools and equipment
- Tests systems and components
- Calculates ventilation requirements and gas storage capacity
- Locates and repairs gas leaks
- Assesses roof work site safety

Initiative and enterprise

- Maximises use of resources by recycling, re-using or using appropriate disposal methods
- Responds to change and workplace challenges
- Determines requirements for heating system installations, appliance installations, flue installations and gas piping system purging

Planning and organising

- Prepares work area
- Identifies and obtains necessary documentation
- Collects, analyses and organises workplace information
- Selects and uses appropriate materials, tools and equipment
- Carries out site inspections
- Determines material quantity requirements and conformity to requirements
- Coordinates delivery of materials
- Determines installation requirements
- Fabricates, sets out, installs and commissions components, equipment and systems
- Prioritises and sequences tasks
- Applies time management skills to ensure work is completed to time requirements

Self management

- Recognises obligations and accepts responsibility for own work and safety

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- Recognises quality requirements and completes work to expected standard
- Identifies personal career development needs and sets own and team work goals
- Participates in workplace induction
- Cleans up work area, including tools and equipment
- Seeks support to improve work performance

Learning

- Identifies own learning needs and seeks skill development as required
- Is open to learning new ideas and techniques
- Participates in workplace induction

Technology

- Uses electricity and electrical equipment safely
- Uses and operates a range of tools and equipment correctly and safely
- Properly starts up, operates and shuts down equipment
- Identifies technological trends that may affect the plumbing and services sector
- Carries out pre- and post-operational checks on tools and equipment
- Performs tool and equipment maintenance as required

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Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 32 units of competency:
  - 26 core units
  - 6 elective units.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

CPCPCM2039A	Carry out interactive workplace communication
CPCPCM2040A	Read plans and calculate plumbing quantities
CPCPCM2041A	Work effectively in the plumbing and services sector
CPCPCM2043A	Carry out WHS requirements
CPCPCM2045A	Handle and store plumbing materials
CPCPCM2046A	Use plumbing hand and power tools
CPCPCM2047A	Carry out levelling
CPCPCM2048A	Cut and join sheet metal
CPCPCM2050A	Mark out materials
CPCPCM2052A	Weld using oxy-acetylene equipment
CPCPCM2053A	Weld using manual metal arc welding equipment
CPCPCM2055A	Work safely on roofs
CPCPCM3021A	Flash penetrations through roofs and walls
CPCPGS3046A	Install LPG systems in caravans, mobile homes and mobile workplaces
CPCPGS3047A	Install LPG systems in marine craft
CPCPGS3048A	Install gas pressure control equipment
CPCPGS3049A	Install Type A gas appliance flues

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CPCPGS3051A	Purge consumer piping
CPCPGS3052A	Maintain Type A gas appliances
CPCPGS3053A	Disconnect and reconnect Type A gas appliances
CPCPGS3054A	Calculate and install natural ventilation for Type A gas appliances
CPCPGS3056A	Install gas piping systems
CPCPGS3057A	Size consumer gas piping systems
CPCPGS3059A	Install LPG storage of aggregate storage capacity up to 500 litres
CPCPGS3061A	Install and commission Type A gas appliances
HLTFA211A	Provide basic emergency life support

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Elective units

CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCCCM2010B	Work safely at heights
CPCCCM3001C	Operate elevated work platforms
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry
CPCCRI3001A	Operate personnel and materials hoists
CPCCST2005A	Carry out load slinging of off-site materials
CPCPCM2049A	Cut using oxy-LPG-acetylene equipment
CPCPCM2054A	Carry out simple concreting and rendering
CPCPCM3022A	Weld polyethylene and polypropylene pipes using fusion method
CPCPCM3023A	Fabricate and install non-ferrous pressure piping
CPCPGS3050A	Install Type B gas appliance flues
CPCPGS3055A	Install gas sub-meters
CPCPGS3060A	Install LPG storage of aggregate storage capacity exceeding 500 litres and less than 8KL
CPCPMS2021A	Assemble mechanical services components
CPCPMS3031A	Fabricate and install steel pressure piping
CPCPMS3033A	Install small bore heating systems
CPCPMS3035A	Install and test ducting systems
MEM05049B	Perform routine gas tungsten arc welding
MEM05050B	Perform routine gas metal arc welding
RIICCM210A	Install trench support

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Custom Content Section

Not applicable.

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CPC32813 Certificate III in Fire Protection

Modification History

Revised qualification deemed not equivalent to CPC32812

- four core units revised resulting in non-equivalence and changes to codes:
  - CPCPFS3044A Install distribution and range pipes
  - CPCPFS3045A Fit off sprinkler heads, controls and ancillary equipment
  - CPCPFS3046A Test the integrity of water-based fire protection systems using pressure
  - CPCPFS3047A Test and maintain automatic fire sprinklers
- two new units added to elective pool:
  - CPCPFS3048A Install fixed fire pumpsets
  - CPCPFS3049A Conduct preventive maintenance on fixed fire pumpsets
- pathways information added

Description

This qualification provides a trade outcome in installing, testing and maintaining fire protection systems.

Occupational titles may include:

- Fire protection systems technician.

The qualification has core and elective unit of competency requirements that cover some common skills for the plumbing industry, as well as fire protection specialist units of competency.

The plumbing industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

This qualification is suitable for an Australian Apprenticeship pathway.

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Licensing/Regulatory Information

This is a licensed occupation. Check with relevant state and territory licensing and regulatory authorities. State and territory jurisdictions may have different regulatory requirements.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification

Communication	• Communicates with clients, colleagues and others using effective and appropriate communication techniques, including:
	  • Clear and direct communication
	  • Active listening
	  • Verbal and non-verbal language
	  • Questioning to identify and confirm requirements
	  • Language and concepts appropriate to cultural differences
	• Follows instructions from supervisor and other relevant persons
	• Understands, interprets and applies information as required from:
	  • Regulatory, legislative, licensing and organisational requirements
	  • Environmental and work health and safety (WHS) requirements, including safety data sheets (SDS)
	  • Codes and standards
	  • Plans, drawings and specifications
	  • Schedules
	  • Load tables
	  • Designs
	  • Safety signs and symbols
	  • Organisational policies and procedures
	• Understands relevant definitions, terminology, symbols, abbreviations and language
	• Uses industry-accepted visual communications, including hand signals
	• Reports and records routine workplace and regulatory information, including test data
	• Applies measurements and calculations using appropriate equipment, formulas and records as required
	• Reports and records hazards and risks
	• Produces drawings and sketches

Teamwork	• Works as part of a team • Provides assistance and encouragement to other team members • Initiates and encourages improvements in team performance • Works with others to plan and sequence tasks

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- Identifies and uses the strengths of other team members
- Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities
- Participates in workplace meetings

Problem solving

- Responds effectively to hazards, risks, emergencies and first aid situations
- Examines tools and equipment prior to use for damage, missing components or other defects
- Identifies typical faults and problems and takes remedial actions and/or reports to supervisor
- Rectifies simple faults with tools and equipment
- Tests systems, components and services
- Locates and repairs gas leaks
- Assesses roof work site safety

Initiative and enterprise

- Maximises use of resources by recycling, re-using or using appropriate disposal methods
- Responds to change and workplace challenges
- Designs pre-calculated fire sprinkler systems
- Determines requirements for installations

Planning and organising

- Prepares work area
- Identifies and obtains necessary documentation
- Collects, analyses and organises workplace information
- Selects and uses appropriate materials, tools and equipment
- Carries out site inspections
- Determines material quantity requirements and conformity to requirements
- Coordinates delivery of materials
- Determines installation requirements
- Fabricates and installs systems and components
- Installs water services, pumps and meters
- Prioritises and sequences tasks
- Applies time management skills to ensure work is completed to time requirements

Self management

- Recognises obligations and accepts responsibility for own work and safety
- Recognises quality requirements and completes work to expected standard

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- Identifies personal career development needs and sets own and team work goals
- Participates in workplace induction
- Cleans up work area, including tools and equipment
- Seeks support to improve work performance

Learning

- Identifies own learning needs and seeks skill development as required
- Is open to learning new ideas and techniques
- Participates in workplace induction

Technology

- Uses electricity and electrical equipment safely
- Uses and operates a range of tools and equipment correctly and safely
- Properly starts up, operates and shuts down equipment
- Identifies technological trends that may affect the plumbing and services sector
- Carries out pre- and post-operational checks on tools and equipment
- Performs tool and equipment maintenance as required

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Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 37 units of competency:
  - 31 core units
  - 6 elective units.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

CPCPCM2039A	Carry out interactive workplace communication
CPCPCM2040A	Read plans and calculate plumbing quantities
CPCPCM2041A	Work effectively in the plumbing and services sector
CPCPCM2043A	Carry out WHS requirements
CPCPCM2045A	Handle and store plumbing materials
CPCPCM2046A	Use plumbing hand and power tools
CPCPCM2047A	Carry out levelling
CPCPCM2048A	Cut and join sheet metal
CPCPCM2049A	Cut using oxy-LPG-acetylene equipment
CPCPCM2050A	Mark out materials
CPCPCM2052A	Weld using oxy-acetylene equipment
CPCPCM2053A	Weld using manual metal arc welding equipment
CPCPCM3023A	Fabricate and install non-ferrous pressure piping
CPCPFS2021A	Connect static storage tanks for fixed fire protection systems
CPCPFS3030A	Design pre-calculated fire sprinkler systems
CPCPFS3031A	Fabricate and install fire hydrant and hose reel systems
CPCPFS3034A	Install control valve assemblies, actuating devices and local alarms

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CPCPFS3036A	Install special hazard systems
CPCPFS3037A	Install domestic and residential life safety sprinkler systems
CPCPFS3038A	Test and maintain fire hydrant and hose reel installations
CPCPFS3044A	Install distribution and range pipes
CPCPFS3045A	Fit off sprinkler heads, controls and ancillary equipment
CPCPFS3046A	Test the integrity of water-based fire protection systems using pressure
CPCPFS3047A	Test and maintain automatic fire sprinklers
CPCPMS3031A	Fabricate and install steel pressure piping
CPCPWT3025A	Install water pumpsets
CPCPWT3028A	Install water services
CPPFES2025A	Inspect, test and maintain gaseous fire-suppression systems
CPPFES2043A	Prevent ozone depleting substance and synthetic greenhouse gas emissions
CPPFES2047A	Inspect and test control and indicating equipment
HLTFA211A	Provide basic emergency life support

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Elective units

CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCCCM2010B	Work safely at heights
CPCCCM3001C	Operate elevated work platforms
CPCCPB3015A	Install acoustic and thermal environmental protection systems
CPCCRI3001A	Operate personnel and materials hoists
CPCCST2005A	Carry out load slinging of off-site materials
CPCPCM2054A	Carry out simple concreting and rendering
CPCPCM2055A	Work safely on roofs
CPCPCM3021A	Flash penetrations through roofs and walls
CPCPCM3022A	Weld polyethylene and polypropylene pipes using fusion method
CPCPFS2022A	Install portable fire equipment
CPCPFS3040A	Conduct basic functional testing of water-based fire-suppression systems
CPCPFS3041A	Inspect and test fire pumpsets
CPCPFS3042A	Conduct annual functional testing of complex water-based fire-suppression systems
CPCPFS3043A	Conduct functional water flow testing
CPCPFS3048A	Install fixed fire pumpsets
CPCPFS3049A	Conduct preventive maintenance on fixed fire pumpsets
CPCPWT3029A	Install water pipe systems
CPCPWT3030A	Install home fire sprinkler systems
CPPCMN2002A	Participate in workplace safety arrangements
CPPFES2006A	Prepare for installation and servicing operations
RIICCM210A	Install trench support

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Custom Content Section

Not applicable.

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CPC32912 Certificate III in Construction Crane Operations

Modification History

Version	Comment
1	This version first released with CPC08 Version 8.

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Description

This qualification provides a trade outcome in mobile crane operations in the residential and commercial construction industry. Due to the high risk nature of the job role, the qualification provides a strong focus on safety requirements.

Occupational titles may include:

- licensed crane operator.

The qualification has core unit of competency requirements that cover common skills, as well as specialist skills for crane operators in two specialist streams:

- Stream 1 20 tonne (C2) licence
- Stream 2 60 tonne (C6) licence.

Additional licensing for rigging and elevated work platforms is available depending on the choice of elective units of competency.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

The following CPC08 qualifications provide a pathway into this qualification:

- CPC20112 Certificate II in Construction
- CPC30211 Certificate III in Carpentry
- CPC30511 Certificate III in Dogging
- CPC30711 Certificate III in Rigging.

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Licensing/Regulatory Information

This qualification is recognised by the Crane Industry Council of Australia as entry-level national training for crane operators and is suitable for a traineeship.

This is a licensed occupation. Users should check requirements with their relevant licensing authority.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:
Communication	• exchanges information with other team members in a way that contributes to safe, productive and harmonious relations • communicates at various stages with a range of site workers and visitors, including crane operators and dogmen, building tradespersons, work health and safety inspectors, local utility providers, and the general public • communicates ideas and information
Teamwork	• works in tandem with dogmen • works as a team with other construction workers to minimise accidents • works effectively and sustainably with others in the construction industry
Problem solving	• applies a broad range of techniques to solve logistic and safety problems when transporting and using cranes on work site
Initiative and enterprise	• adapts to new situations • generates options in response to site inspections and project briefs • applies fatigue management strategies
Planning and organising	• reallocates crane usage depending on available labour, weather and material delivery schedule • collects and analyses construction site information • plans and undertakes site inspections • manages time and priorities as part of fatigue management strategies
Self management	• manages own professional development by setting personal goals • evaluates and monitors own performance and takes responsibility for own actions • selects and uses appropriate personal protective equipment
Learning	• contributes to ongoing improvement in own and company operations and outcomes • contributes to the learning community in the workplace • invests time and effort in learning new skills to accommodate change
Technology	• carries out work tasks using the latest techniques and technology to ensure greater efficiency and productivity • demonstrates proficiency with computer consoles on modern cranes

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	• uses a range of devices and media when communicating

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 23 units of competency:
  - 20 core units
  - 3 elective units.

Some units in this qualification have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

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BSBCUS301B	Deliver and monitor a service to customers
CPCCCM1012A	Work effectively and sustainably in the construction industry
CPCCCM1013A	Plan and organise work
CPCCCM1014A	Conduct workplace communication
CPCCCM2001A	Read and interpret plans and specifications
CPCCCM2004A	Handle construction materials
CPCCCM2010B	Work safely at heights
CPCCCM3001C	Operate elevated work platforms
CPCCCM3003A	Work safely around power sources, services and assets
CPCCDO3012A	Perform crane scheduling
CPCCLDG3001A	Licence to perform dogging
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry
TLIB3011A	Set up and rig crane for lift
TLIB3013A	Maintain mobile cranes
TLIB3015A	Undertake site inspection
TLIF2006A	Apply accident-emergency procedures
TLIF2010A	Apply fatigue management strategies
TLIF3084A	Follow mobile crane safety procedures
TLILIC2016A	Licence to drive heavy rigid vehicle*

PLUS

Stream 1 20 tonne (C2) licence

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TLILIC3008A	Licence to operate a slewing mobile crane (up to 20 tonnes)

OR

Stream 2 60 tonne (C6) licence

TLILIC4009A	Licence to operate a slewing mobile crane (up to 60 tonnes)

* It is a prerequisite of the core unit TLILIC2016A Licence to drive heavy rigid vehicle that candidates hold a current Class C drivers licence (for at least 2 years).

Elective units

CPCCCM1015A	Carry out measurements and calculations
CPCCDO3011A	Perform dogging
CPCCLRG3001A	Licence to perform rigging basic level
CPCCRI3012A	Perform basic rigging
CPCCRI3013A	Perform intermediate rigging
TLILIC2005A	Licence to operate a boom-type elevated work platform (boom length 11 meters or more)

Custom Content Section

Not applicable.

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CPC40110 Certificate IV in Building and Construction (Building)

Modification History

Revised qualification deemed equivalent to CPC40110

- two new sustainability elective units added:
  - CPCSUS4002A Use building science principles to construct energy efficient buildings
  - CPCSUS4003A Maximise energy efficiency through applied trade skills
- imported elective units updated
- minor editorial changes to elective packaging rules, without changing intent

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Description

This qualification is designed to meet the needs of builders and managers of small to medium-sized building businesses.

The builder may also be the appropriately licensed person with responsibility under the relevant building licensing authority in the State or Territory. Builder licensing varies across States and Territories and additional requirements to attainment of this qualification may be required.

Occupational titles may include:

- Builder
- Construction manager.

The qualification has core unit of competency requirements that cover common skills for the construction industry.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Additional units of competency may be required to meet builder registration requirements in various States and Territories.

Pathways Information

This qualification is suitable for an Australian Apprenticeship pathway.

Licensing/Regulatory Information

Check with relevant state and territory licensing and regulatory authorities. State and territory jurisdictions may have different regulatory requirements.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:
Communication	• Communicates work health and safety (WHS) policies and procedures • Participates in ensuring compliance with standards, regulations and policies • Communicates effectively with a range of relevant parties through a range of media • Establishes on-site communication systems • Facilitates site meetings • Articulates complex ideas clearly • Interprets a range of complex and technical documents, including relevant regulatory, legislative and licensing requirements, codes and standards, plans, drawings and specifications, schedules, site files, contracts, orders, development approvals and organisational policies and procedures • Analyses and evaluates reports and reference materials • Understands relevant definitions, terminology, symbols and language • Maintains and checks logs, records and documents • Prepares a range of documents, including construction contracts, plans, sketches and drawings and specifications, reports, tenders, schedules, building applications and submissions and file notes • Reports and records hazards, risks and project costs • Negotiates conflict and dispute resolution • Analyses a range of data, including company and stakeholder resource consumption and waste product volumes
Teamwork	• Conducts briefings with team members • Coordinates a range of team members and activities • Keeps team informed of work practices, quality requirements and required actions • Relates positively to fellow workers and the management team • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities • Seeks expert advice where appropriate • Works collaboratively with relevant stakeholders • Understands various stakeholders' roles • Supervises and checks others' work, monitors work processes and ensures safe work practices
Problem solving	• Assesses structural integrity of residential and commercial low rise

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buildings

- Performs various calculations relating to rise and fall amounts, estimating resource acquisition and costs; measuring levels, heights and gradients; structural analysis; drawing dimensions; setting out of construction projects; comparisons of alternative water management systems; waste management minimisation strategies; and thermal efficiency, rated capacity and working load limits
- Examines tools and equipment prior to use for damage, missing components or other defects
- Identifies and rectifies faults
- Responds effectively to hazards, risks and emergencies
- Analyses problems and applies appropriate remedial solutions
- Resolves business disputes
- Deals with customer complaints and disputes
- Deals with contract variations
- Takes action to minimise contract penalties
- Analyses rejected building applications and determines the likely success of an appeal or a resubmission
- Devises approaches, implements and reflects on environmental and water, energy and resource efficiency management policies and procedures relevant to work site to improve environmental sustainability, and shares alternative approaches as required

Initiative and enterprise

- Evaluates properties of construction materials and selects appropriate materials based on evaluation
- Develops compliant, alternative solutions to construction problems
- Assesses thermal efficiency of buildings and reviews design solutions for effectiveness and compliance
- Identifies opportunities for improved water management
- Evaluates effective strategies for insulating structures
- Develops waste management strategies and dispute resolution procedures
- Identifies environmental and resource efficiency improvements, applies knowledge about resource use to organisational activities and customer service, and develops resource efficiency tools

Planning and organising

- Plans and coordinates various work operations
- Prepares project schedules
- Participates in effective implementation of organisation's operational plans
- Plans and organises on-site activities and implements procedures associated with building and construction work
- Identifies and organises resource requirements and obtains supply

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information
- Supervises various administrative and work processes, including claims and payments, insurance coverage, payroll systems and tax systems
- Collects, analyses and organises workplace information and data
- Plans and organises inspections
- Organises testing of construction materials to ensure suitability

Self management
- Manages own performance to ensure required levels of service standards, work quality and professional competence
- Manages work priorities and professional development
- Uses feedback to improve own performance
- Organises and completes daily work activities

Learning
- Is open to new ideas and techniques
- Seeks feedback on personal performance
- Uses information effectively to improve work performance
- Learns from colleagues as part of effective teamwork

Technology
- Operates office equipment
- Uses computer equipment and relevant software
- Uses cameras
- Assesses new and emerging technologies for application to construction processes
- Uses a range of tools and equipment, including technical instruments and surveying equipment
- Maintains tools and equipment as required
- Uses technology to improve efficiency and effectiveness of managing work

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 16 units of competency:
  - 13 core units
  - 3 elective units.

The elective units must be selected as follows:

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- all three elective units may be selected from the elective units listed below
- two of the three elective units may be selected from Certificate III, Certificate IV or Diploma from another endorsed Training Package or from CPC08, provided that at least one unit is from Certificate IV and the industry context is maintained.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

BSBSMB406A	Manage small business finances
CPCCBC4001A	Apply building codes and standards to the construction process for low rise building projects
CPCCBC4002A	Manage occupational health and safety in the building and construction workplace
CPCCBC4003A	Select and prepare a construction contract
CPCCBC4004A	Identify and produce estimated costs for building and construction projects
CPCCBC4005A	Produce labour and material schedules for ordering
CPCCBC4006B	Select, procure and store construction materials for low rise projects
CPCCBC4007A	Plan building or construction work
CPCCBC4008B	Conduct on-site supervision of building and construction projects
CPCCBC4009B	Apply legal requirements to building and construction projects
CPCCBC4010B	Apply structural principles to residential low rise constructions
CPCCBC4011B	Apply structural principles to commercial low rise constructions
CPCCBC4012B	Read and interpret plans and specifications

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Elective units

BSBWOR402A	Promote team effectiveness
BSBITU201A	Produce simple word processed documents
BSBITU202A	Create and use spreadsheets
BSBITU301A	Create and use databases
BSBMGT403A	Implement continuous improvement
BSBPMG411A	Apply project quality management techniques
BSBPMG415A	Apply project risk management techniques
BSBPMG522A	Undertake project work
BSBSMB401A	Establish legal and risk management requirements of small business
BSBSMB402A	Plan small business finances
BSBSMB404A	Undertake small business planning
BSBSMB405B	Monitor and manage small business operations
BSBWOR401A	Establish effective workplace relationships
BSBWRT401A	Write complex documents
CPCCBC4013A	Prepare and evaluate tender documentation
CPCCBC4014A	Prepare simple building sketches and drawings
CPCCBC4015A	Prepare specifications for all construction works
CPCCBC4016A	Administer a construction contract
CPCCBC4017A	Arrange resources and prepare for the building or construction project
CPCCBC4018A	Apply site surveys and set-out procedures to building and construction projects
CPCCBC4019A	Apply sustainable building design principles to water management systems
CPCCBC4020A	Build thermally efficient and sustainable structures

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CPCCBC4021A	Minimise waste on the building and construction site
CPCCBC4022A	Supervise tilt-up work
CPCCBC4024A	Resolve business disputes
CPCCBC4025A	Manage personal work priorities and professional development
CPCCBC4026A	Arrange building applications and approvals
CPCCBC4051A	Supervise asbestos removal
CPCCOHS1001A	Work safely in the construction industry
CPCSUS4001A	Implement and monitor environmentally sustainable work practices
CPCSUS4002A	Use building science principles to construct energy efficient buildings
CPCSUS4003A	Maximise energy efficiency through applied trade skills
HLTHIR403C	Work effectively with culturally diverse clients and co-workers
TAEDEL402A	Plan, organise and facilitate learning in the workplace

Custom Content Section

Not applicable.

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CPC40208 Certificate IV in Building and Construction (Contract Administration)

Modification History

Revised qualification deemed equivalent to CPC40208
Core and elective units revised resulting in a number of unit identifier changes

Description

This qualification is designed to meet the needs of contract administrators working in small to medium-sized enterprises.

Occupational titles may include:

- Contract administrator.

The qualification has core unit of competency requirements that cover common skills for the construction industry.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Additional units of competency may be required to meet builder registration requirements in various States and Territories.

Pathways Information

Not applicable.

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Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:
Communication	• Interprets a range of complex and technical documents, including relevant regulatory, legislative and licensing requirements, codes and standards, plans, drawings and specifications, schedules, site files, contracts, orders and organisational policies and procedures • Analyses and evaluates reports and reference materials • Provides clear and accurate information to customers about the construction process and requirements and contracts • Communicates effectively with a range of relevant parties through a range of media • Articulates complex ideas clearly • Understands relevant definitions, terminology, symbols and language • Negotiates contracts as well as conflict and dispute resolution • Prepares documents, including construction contracts, plans, sketches and drawings and specifications, reports, tenders, schedules, building applications and submissions and file notes • Reports and records project costs • Maintains and checks logs, records and documents • Analyses a range of data, including company and stakeholder resource consumption and waste product volumes
Teamwork	• Coordinates a range of team members and activities • Seeks expert advice where appropriate • Works collaboratively with relevant stakeholders • Understands various stakeholders' roles • Relates positively to fellow workers and the management team • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities
Problem solving	• Performs various calculations relating to rise and fall amounts, estimating resource acquisition and costs, comparisons of alternative water management systems; waste management minimisation strategies; and thermal efficiency

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Employability skill	Industry/enterprise requirements for this qualification include:
	• Takes action to minimise contract penalties • Identifies and rectifies faults • Responds effectively to hazards, risks and emergencies • Analyses problems and applies remedial solutions • Resolves business disputes • Deals with contract variations • Takes action to minimise contract penalties • Analyses rejected building applications and determines the likely success of an appeal or a resubmission • Devises approaches, implements and reflects on environmental and water, energy and resource efficiency management policies and procedures relevant to work site to improve environmental sustainability and shares alternative approaches as required
Initiative and enterprise	• Acts with initiative and foresight to ensure legal requirements are applied accurately • Develops compliant, alternative solutions to construction problems • Evaluates properties of construction materials and selects appropriate materials based on evaluation • Identifies opportunities for improved water management • Evaluates effective strategies for insulating structures • Develops waste management strategies and dispute resolution procedures • Identifies environmental and resource efficiency improvements, applies knowledge about resource use to organisational activities and customer service and develops resource efficiency tools
Planning and organising	• Plans and coordinates various work operations • Prepares project schedule • Participates in effective implementation of organisation's operational plans • Plans and organises on-site activities and implements procedures associated with building and construction work • Identifies and organises resource requirements and obtains supply information • Supervises various administrative and work processes, including payments • Collects, analyses and organises workplace information and data

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Employability skill	Industry/enterprise requirements for this qualification include:
	• Plans and organises inspections • Organises testing of construction materials to ensure suitability
Self management	• Manages own performance to ensure required levels of service standards, work quality and professional competence • Manages work priorities and professional development • Uses feedback to improve own performance • Organises and completes daily work activities
Learning	• Is open to new ideas and techniques • Seeks feedback on personal performance • Uses information effectively to improve work performance • Learns from colleagues as part of effective teamwork
Technology	• Operates office equipment and computers • Uses digital cameras • Uses technology to improve efficiency and effectiveness of managing work

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 15 units of competency:
  - 9 core units
  - 6 elective units.

The electives may be selected as follows:

- all six elective units may be selected from the list below
- two of the six elective units may be selected from a Certificate IV qualification in another endorsed Training Package or within CPC08 Construction, Plumbing and Services Training Package, ensuring the industry context of the qualification is maintained
- one of the six elective units may be selected from either Certificate III or Diploma level.

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Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

BSBOHS201A	Participate in OHS processes
CPCCBC4003A	Select and prepare a construction contract
CPCCBC4006B	Select, procure and store construction materials for low rise projects
CPCCBC4012B	Read and interpret plans and specifications
CPCCBC4016A	Administer a construction contract
CPCCBC4026A	Arrange building applications and approvals
CPCCBC4029B	Apply construction information to the sales process
CPCCBC4031A	Process client requirements
CPCCBC4032A	Apply contract law to sales processes

Elective units

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BSBWOR402A	Promote team effectiveness
BSBITU201A	Produce simple word processed documents
BSBITU202A	Create and use spreadsheets
BSBITU301A	Create and use databases
BSBMGT403A	Implement continuous improvement
BSBPMG404A	Apply quality management techniques
BSBPMG407A	Apply risk management techniques
BSBPMG510A	Manage projects
BSBWOR401A	Establish effective workplace relationships
BSBWRT401A	Write complex documents
CPCCBC4001A	Apply building codes and standards to the construction process for low rise building projects
CPCCBC4005A	Produce labour and material schedules for ordering
CPCCBC4007A	Plan building or construction work
CPCCBC4013A	Prepare and evaluate tender documentation
CPCCBC4014A	Prepare simple building sketches and drawings
CPCCBC4017A	Arrange resources and prepare for the building or construction project
CPCCBC4019A	Apply sustainable building design principles to water management systems
CPCCBC4020A	Build thermally efficient and sustainable structures
CPCCBC4021A	Minimise waste on the building and construction site
CPCCBC4024A	Resolve business disputes
CPCCBC4025A	Manage personal work priorities and professional development
CPCSUS4001A	Implement and monitor environmentally sustainable work practices
HLTHIR403C	Work effectively with culturally diverse clients and co-workers

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Custom Content Section

Not applicable.

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CPC40308 Certificate IV in Building and Construction (Estimating)

Modification History

Revised qualification deemed equivalent to CPC40308
Core and elective units revised resulting in a number of unit identifier changes

Description

This qualification is designed to meet the needs of estimators and schedulers in the building and construction field.

Occupational titles may include:

- Building estimator
- Building scheduler.

The qualification has core unit of competency requirements that cover common skills for the construction industry.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Additional units of competency may be required to meet builder registration requirements in various States and Territories.

Pathways Information

Not applicable.

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Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:
Communication	• Communicates effectively with a range of relevant parties through a range of media • Articulates complex ideas clearly • Interprets a range of complex and technical documents, including relevant regulatory, legislative, licensing and registration requirements, codes and standards, plans, drawings and specifications, schedules, development approvals, site files, contracts, and organisational policies and procedures • Analyses and evaluates reports and reference materials • Understands relevant definitions, terminology, symbols and language • Reports and records project costs • Maintains and checks logs, records and documents • Prepares a range of documents, including construction contracts, plans, sketches and drawings and specifications, reports, tenders, schedules, building applications and submissions and file notes • Negotiates conflict and dispute resolution • Analyses a range of data, including company and stakeholder resource consumption and waste product volumes
Teamwork	• Coordinates a range of team members and activities • Keeps team informed of work practices, quality requirements and required actions • Discusses ideas with team members • Seeks expert advice where appropriate • Works collaboratively with relevant stakeholders • Understands various stakeholders' roles • Relates positively to fellow workers and the management team • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities
Problem solving	• Assesses structural integrity of residential and commercial low rise buildings • Performs various calculations relating to rise and fall amounts, estimating resource acquisition and costs, drawing

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Employability skill	Industry/enterprise requirements for this qualification include:
	dimensions, comparisons of alternative water management systems; waste management minimisation strategies; and thermal efficiency, rated capacity and working load limits and budgeting and forecasting. • Examines tools and equipment prior to use for damage, missing components or other defects • Identifies and rectifies faults • Responds effectively to hazards, risks and emergencies • Analyses problems and applies appropriate remedial solutions • Resolves business disputes • Devises approaches, implements and reflects on environmental and water, energy and resource efficiency management policies and procedures relevant to work site to improve environmental sustainability and shares alternative approaches as required
Initiative and enterprise	• Evaluates properties of construction materials and selects appropriate materials based on evaluation • Develops compliant, alternative solutions to construction problems • Assesses thermal efficiency of buildings and reviews design solutions for effectiveness and compliance • Identifies opportunities for improved water management • Evaluates effective strategies for insulating structures • Develops waste management strategies and dispute resolution procedures • Identifies environmental and resource efficiency improvements, applies knowledge about resource use to organisational activities and customer service and develops resource efficiency tools
Planning and organising	• Plans and coordinates various work operations • Prepares project schedules • Participates in effective implementation of organisation's operational plans • Plans and organises on-site activities and implements procedures associated with building and construction work • Identifies and organises resource requirements and obtains supply information • Supervises various administrative and work processes,

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Employability skill	Industry/enterprise requirements for this qualification include:
	including payments collects, analyses and organises workplace information and data • Plans and organises inspections • Organises testing of construction materials to ensure suitability
Self management	• Manages own performance to ensure required levels of service standards, work quality and professional competence • Manages work priorities and professional development • Uses feedback to improve own performance • Organises and completes daily work activities
Learning	• Is open to new ideas and techniques • Seeks feedback on personal performance • Uses information effectively to improve work performance • Learns from colleagues as part of effective teamwork
Technology	• Operates office equipment • Uses computer equipment and relevant software • Uses cameras • Assesses new and emerging technologies for application to construction processes • Uses a range of tools and equipment • Maintains tools and equipment as required • Uses technology to improve efficiency and effectiveness of managing work

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 15 units of competency:
  - 8 core units
  - 7 elective units.

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The elective units are to be chosen as follows:

- up to 7 units from general elective units
- up to 3 units from qualifications in CPC08 or another current Training Package or state accredited course, provided the integrity of the AQF alignment is ensured, they contribute to a valid, industry-supported vocational outcome, and that no more than:
- 2 units are from a Certificate IV qualification
- 1 unit is from a Certificate III or Diploma qualification.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

BSBPMG407A	Apply risk management techniques
CPCCBC4001A	Apply building codes and standards to the construction process for low rise building projects
CPCCBC4004A	Identify and produce estimated costs for building and construction projects
CPCCBC4005A	Produce labour and material schedules for ordering
CPCCBC4010B	Apply structural principles to residential low rise constructions
CPCCBC4011B	Apply structural principles to commercial low rise constructions
CPCCBC4012B	Read and interpret plans and specifications
CPCCBC4013A	Prepare and evaluate tender documentation

Elective units

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BSBCUS301B	Deliver and monitor a service to customers
BSBWOR402A	Promote team effectiveness
BSBITU201A	Produce simple word processed documents
BSBITU202A	Create and use spreadsheets
BSBITU301A	Create and use databases
BSBMGT403A	Implement continuous improvement
BSBOHS404B	Contribute to the implementation of strategies to control OHS risk
BSBPMG404A	Apply quality management techniques
BSBWRT401A	Write complex documents
CPCCBC4003A	Select and prepare a construction contract
CPCCBC4006B	Select, procure and store construction materials for low rise projects
CPCCBC4014A	Prepare simple building sketches and drawings
CPCCBC4015A	Prepare specifications for all construction works
CPCCBC4016A	Administer a construction contract
CPCCBC4017A	Arrange resources and prepare for the building or construction project
CPCCBC4019A	Apply sustainable building design principles to water management systems
CPCCBC4020A	Build thermally efficient and sustainable structures
CPCCBC4021A	Minimise waste on the building and construction site
CPCCBC4024A	Resolve business disputes
CPCCBC4025A	Manage personal work priorities and professional development
CPCCBC4028A	Prepare design brief for construction works
CPCCBC4051A	Supervise asbestos removal
CPCCOHS1001A	Work safely in the construction industry

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CPCSUS4001A	Implement and monitor environmentally sustainable work practices
HLTHIR403C	Work effectively with culturally diverse clients and co-workers

Custom Content Section

Not applicable.

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CPC40408 Certificate IV in Building and Construction (Sales)

Modification History

Revised qualification deemed equivalent to CPC40408
Core and elective units revised resulting in a number of unit identifier changes

Description

This qualification is designed to meet the needs of sales consultant in the building and construction industry.

Occupational titles may include:

- Building sales consultant.

The qualification has core unit of competency requirements that cover common skills for the construction industry.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Additional units of competency may be required to meet builder registration requirements in various States and Territories.

Pathways Information

Not applicable.

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Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:
Communication	• Interprets a range of complex and technical documents, including relevant regulatory, legislative and licensing requirements, codes and standards, plans, drawings and specifications, schedules, site files, contracts, orders and organisational policies and procedures • Analyses and evaluates reports and reference materials • Provides clear and accurate information to customers about the construction process and requirements and contracts and the industry environment and opportunities • Communicates effectively with a range of relevant parties through a range of media • Articulates complex ideas clearly • Uses gestures, posture, body language, facial expression and voice to create a supportive selling environment • Uses persuasive communication techniques to secure buyer interest • Understands relevant definitions, terminology, symbols and language • Negotiates contracts as well as conflict and dispute resolution • Prepares documents, including construction contracts, plans, sketches and drawings and specifications, reports, tenders, schedules, building applications and submissions and file notes • Reports and records project costs • Maintains and checks logs, records and documents • Analyses a range of data, including company and stakeholder resource consumption and waste product volumes
Teamwork	• Works as an individual or as part of a sales team to conduct sales activities and to support other team members in achieving sales targets and objectives • Seeks expert advice where appropriate • Works collaboratively with relevant stakeholders • Understands various stakeholders' roles • Relates positively to fellow workers and the management team • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities

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Employability skill	Industry/enterprise requirements for this qualification include:
Problem solving	• Works as an individual or as part of a sales team to conduct sales activities and to support other team members in achieving sales targets and objectives • Seeks expert advice where appropriate • Works collaboratively with relevant stakeholders • Understands various stakeholders' roles • Relates positively to fellow workers and the management team • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities
Initiative and enterprise	• Acts with initiative and foresight to ensure legal requirements are applied accurately • Identifies maintenance requirements for display or presentation areas • Evaluates properties of construction materials and selects appropriate materials based on evaluation • Evaluates effective strategies for insulating structures • Develops waste management strategies and dispute resolution procedures • Identifies environmental and resource efficiency improvements, applies knowledge about resource use to organisational activities and customer service and develops resource efficiency tools
Planning and organising	• Plans and coordinates various work operations • Prepares project schedules • Participates in effective implementation of organisation's operational plans • Plans and organises on-site activities and implements procedures associated with building and construction work • Identifies and organises resource requirements and obtains supply information • Supervises various administrative and work processes, including payments • Collects, analyses and organises workplace information and data • Plans and organises inspections • Plans and organises effective display or presentation areas,

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Employability skill	Industry/enterprise requirements for this qualification include:
	including provision of customer facilities
Self management	• Manages own performance to ensure required levels of service standards, work quality and professional competence • Manages work priorities and professional development • Uses feedback to improve own performance • Organises and completes daily work activities
Learning	• Is open to new ideas and techniques • Acquires and applies industry knowledge • Seeks feedback on personal performance • Uses information effectively to improve work performance • Learns from colleagues as part of effective teamwork
Technology	• Operates office equipment and computers • Uses digital cameras • Uses technology to improve efficiency and effectiveness of managing work

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 15 units of competency:
  - 9 core units
  - 6 elective units.

The elective units are to be chosen as follows:

- up to 6 units from general elective units
- up to 3 units from qualifications in CPC08 or another current Training Package or state accredited course, provided the integrity of the AQF alignment is ensured, they contribute to a valid, industry-supported vocational outcome, and that no more than:
  - 2 units are from a Certificate IV qualification

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- 1 unit is from a Certificate III or Diploma qualification.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

BSBOHS201A	Participate in OHS processes
CPCCBC4003A	Select and prepare a construction contract
CPCCBC4012B	Read and interpret plans and specifications
CPCCBC4027B	Establish a basis for sales consulting
CPCCBC4029B	Apply construction information to the sales process
CPCCBC4030A	Analyse and communicate industry information
CPCCBC4031A	Process client requirements
CPCCBC4032A	Apply contract law to sales processes
CPCCBC4033A	Maintain the sales environment

Elective units

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BSBCUS402B	Address customer needs
BSBITU201A	Produce simple word processed documents
BSBITU202A	Create and use spreadsheets
BSBITU301A	Create and use databases
BSBMGT403A	Implement continuous improvement
BSBMKG414A	Undertake marketing activities
BSBPMG404A	Apply quality management techniques
BSBRES401A	Analyse and present research information
BSBSMB401A	Establish legal and risk management requirements of small business
BSBSLS403A	Present a sales solution
BSBSLS404A	Secure prospect commitment
BSBWRT401A	Write complex documents
CPCCBC4014A	Prepare simple building sketches and drawings
CPCCBC4016A	Administer a construction contract
CPCCBC4019A	Apply sustainable building design principles to water management systems
CPCCBC4020A	Build thermally efficient and sustainable structures
CPCCBC4021A	Minimise waste on the building and construction site
CPCCBC4024A	Resolve business disputes
CPCCBC4025A	Manage personal work priorities and professional development
CPCSUS4001A	Implement and monitor environmentally sustainable work practices
CPPDSM4014A	Market property for sale
CPPDSM4022A	Sell and finalise the sale of property by private treaty
HLTHIR403C	Work effectively with culturally diverse clients and co-workers

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Custom Content Section

Not applicable.

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CPC40508 Certificate IV in Building and Construction (Site Management)

Modification History

Revised qualification deemed equivalent to CPC40508

- new concreting unit added the elective pool (CPCCCO4001A Supervise concreting work)
- imported elective unit BSBPMG510A updated to current version (BSBPMG522A Undertake project work)
- minor editorial changes to elective packaging rules, without changing intent
- pathways information added

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Description

This qualification is designed to meet the needs of site managers and supervisors in the building and construction industry.

Occupational titles may include:

- Building site manager
- Building site supervisor.

The qualification has core unit of competency requirements that cover common skills for the construction industry.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Additional units of competency may be required to meet builder registration requirements in various States and Territories.

Pathways information

This qualification is suitable for an Australian Apprenticeship pathway.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Check with relevant state and territory licensing and regulatory authorities. State and territory jurisdictions may have different regulatory requirements.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:
Communication	• Communicates work health and safety (WHS) policies and procedures • Participates in ensuring compliance with standards, regulations and policies • Communicates effectively with a range of relevant parties through a range of media • Establishes on-site communication systems • Facilitates site meetings • Articulates complex ideas clearly • Interprets a range of complex and technical documents, including relevant regulatory, legislative, licensing and registration requirements, codes and standards, plans, drawings and specifications, contracts, schedules, site files, development approvals, and organisational policies and procedures • Analyses and evaluates reports and reference materials • Understands relevant definitions, terminology, symbols and language • Maintains and checks logs, records and documents • Prepares a range of documents, including construction contracts, plans, sketches and drawings and specifications, reports, tenders, schedules, building applications and submissions and file notes • Reports and records hazards and risks • Negotiates conflict and dispute resolution • Analyses a range of data, including company and stakeholder resource consumption and waste product volumes
Teamwork	• Conducts briefings with team members • Coordinates a range of team members and activities • Keeps team informed of work practices, quality requirements and required actions • Relates positively to fellow workers and the management team • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities • Seeks expert advice where appropriate • Works collaboratively with relevant stakeholders • Understands various stakeholders' roles • Supervises and checks others' work, monitors work processes and ensures safe work practices

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Employability skill	Industry/enterprise requirements for this qualification include:
	• Discusses ideas with team members
Problem solving	• Assesses structural integrity of residential and commercial low rise buildings • Performs various calculations relating to estimating resource acquisition and costs, rise and fall amounts measurement of levels, heights and gradients, structural analysis, drawing dimensions, setting out of construction projects, comparisons of alternative water management systems, waste management minimisation strategies and thermal efficiency, rated capacity and working load limits and budgeting and forecasting • Examines tools and equipment prior to use for damage, missing components or other defects • Identifies and rectifies faults • Responds effectively to hazards, risks and emergencies • Analyses problems and applies appropriate remedial solutions • Resolves business disputes • Deals with customer complaints and disputes • Analyses rejected building applications and determines the likely success of an appeal or a resubmission • Devises approaches, implements and reflects on environmental and water, energy and resource efficiency management policies and procedures relevant to work site to improve environmental sustainability and shares alternative approaches as required
Initiative and enterprise	• Evaluates properties of construction materials and selects appropriate materials based on evaluation • Develops compliant, alternative solutions to construction problems • Assesses thermal efficiency of buildings and reviews design solutions for effectiveness and compliance • Identifies risks and hazards • Identifies opportunities for improved water management • Evaluates effective strategies for insulating structures • Develops waste management strategies and dispute resolution procedures • Identifies environmental and resource efficiency improvements, applies knowledge about resource use to organisational activities and customer service and develops resource efficiency tools

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Employability skill	Industry/enterprise requirements for this qualification include:
Planning and organising	• Plans and coordinates various work operations • Prepares project schedules • Participates in effective implementation of organisation's operational plans • Plans and organises on-site activities and implements procedures associated with building and construction work • Identifies and organises resource requirements and obtains supply information • Supervises various administrative and work processes, including claims and payments, insurance coverage, payroll systems and tax systems • Collects, analyses and organises workplace information and data • Plans and organises inspections • Organises testing of construction materials to ensure suitability
Self management	• Manages own performance to ensure required levels of service standards, work quality and professional competence • Manages work priorities and professional development • Uses feedback to improve own performance • Organises and completes daily work activities
Learning	• Is open to new ideas and techniques • Seeks feedback on personal performance • Uses information effectively to improve work performance • Learns from colleagues as part of effective teamwork
Technology	• Operates office equipment • Uses computer equipment and relevant software • Uses cameras • Assesses new and emerging technologies for application to construction processes • Uses a range of tools and equipment, including technical instruments and surveying equipment • Maintains tools and equipment as required • Uses technology to improve efficiency and effectiveness of managing work

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Employability skill	**Industry/enterprise requirements for this qualification include:**

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 15 units of competency:
  - 9 core units
  - 6 elective units.

The elective units must ensure the integrity of the AQF alignment and contribute to a valid, industry-supported vocational outcome and are to be chosen as follows:

- all six elective units may be selected from the elective units listed below
- two of the six elective units may be selected from a Certificate IV qualification in another endorsed Training Package or from CPC08 Construction, Plumbing and Services Training Package
- one of the six elective units may be selected from either Certificate III or Diploma level.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

BSBWOR402A	Promote team effectiveness
CPCCBC4001A	Apply building codes and standards to the construction process for low rise building projects
CPCCBC4002A	Manage occupational health and safety in the building and construction workplace
CPCCBC4007A	Plan building or construction work
CPCCBC4008B	Conduct on-site supervision of building and construction projects
CPCCBC4009B	Apply legal requirements to building and construction projects
CPCCBC4010B	Apply structural principles to residential low rise constructions

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CPCCBC4011B	Apply structural principles to commercial low rise constructions
CPCCBC4012B	Read and interpret plans and specifications

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Elective units

BSBCUS301B	Deliver and monitor a service to customers
BSBITU201A	Produce simple word processed documents
BSBITU202A	Create and use spreadsheets
BSBITU301A	Create and use databases
BSBMGT403A	Implement continuous improvement
BSBPMG404A	Apply quality management techniques
BSBPMG407A	Apply risk management techniques
BSBPMG522A	Undertake project work
BSBWOR401A	Establish effective workplace relationships
BSBWRT401A	Write complex documents
CPCCBC4005A	Produce labour and material schedules for ordering
CPCCBC4014A	Prepare simple building sketches and drawings
CPCCBC4015A	Prepare specifications for all construction works
CPCCBC4017A	Arrange resources and prepare for the building or construction project
CPCCBC4018A	Apply site surveys and set-out procedures to building and construction projects
CPCCBC4019A	Apply sustainable building design principles to water management systems
CPCCBC4020A	Build thermally efficient and sustainable structures
CPCCBC4021A	Minimise waste on the building and construction site
CPCCBC4024A	Resolve business disputes
CPCCBC4025A	Manage personal work priorities and professional development
CPCCBC4026A	Arrange building applications and approvals
CPCCBC4028A	Prepare design brief for construction works

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CPCCBC4051A	Supervise asbestos removal
CPCCCO4001A	Supervise concreting work
CPCCOHS1001A	Work safely in the construction industry
CPCSUS4001A	Implement and monitor environmentally sustainable work practices
HLTHIR403C	Work effectively with culturally diverse clients and co-workers
TAEDEL402A	Plan, organise and facilitate learning in the workplace

Custom Content Section

Not applicable.

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CPC40611 Certificate IV in Building and Construction (Specialist Trades)

Modification History

Revised qualification deemed equivalent to CPC40611
Core and elective units revised resulting in a number of unit identifier changes
Addition of the following units to elective unit list to correct their omission from the packaging rules, given their status as prerequisite to CPCCLRG4001A and CPCCLSF4001A respectively:

- CPCCLRG3002A Licence to perform rigging intermediate level
- CPCCLSF3001A Licence to erect, alter and dismantle scaffolding intermediate level

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Description

This qualification is designed to meet the needs of experienced tradespersons seeking to expand their skills in a diverse range of technical areas. The qualification also reflects the needs of tradespersons responsible for managing projects.

Occupational titles may include:

- Building manager and supervisor
- Heritage restorer
- Crane operator
- Rigger.

The qualification has core unit of competency requirements that cover common skills for the construction industry. An entry requirement for the Heritage restoration stream is completion of one of the following Certificate III qualifications or their equivalent:

- Bricklaying/Blocklaying
- Carpentry or Carpentry and Joinery
- Painting and Decorating
- Solid Plastering
- Stonemasonry (Monumental/Installation).

An entry requirement for the Refractory bricklaying stream is completion of the Certificate III in Bricklaying/Blocklaying or equivalent.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Additional units of competency may be required to meet builder registration requirements in various States and Territories.

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Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:
Communication	• Participates in ensuring compliance with standards, regulations and policies • Communicates effectively with a range of relevant parties through a range of media • Articulates complex ideas clearly • Uses standard communication symbols • Interprets a range of complex and technical documents, including relevant regulatory, legislative, licensing and registration requirements, codes and standards, plans, drawings and specifications, schedules, load tables, orders, contracts, material safety data sheets and organisational policies and procedures • Analyses and evaluates records, reports and reference materials • Understands relevant definitions, terminology, symbols and language • Reports and records hazards and risks and project costs • Maintains and checks logs, records and documents • Prepares a range of documents, including work plans, file notes, drawings and sketches, heritage works safety management plans and heritage restoration work reports • Negotiates conflict and dispute resolution • Analyses a range of data, including company and stakeholder resource consumption and waste product volumes
Teamwork	• Discusses and agrees roles, responsibilities and requirements of project team members • Supervises and checks others' work, monitors work processes and ensures safe work practices • Identifies effective strategies for problem resolution within the project team • Seeks expert advice where appropriate • Works collaboratively with relevant stakeholders • Understands various stakeholders' roles • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities

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Employability skill	Industry/enterprise requirements for this qualification include:
Problem solving	• Performs various calculations relating to estimating resource acquisition and costs, drawing dimensions, comparisons of alternative water management systems, waste management minimisation strategies and thermal efficiency, rated capacity and working load limits • Examines tools and equipment prior to use for damage, missing components or other defects • Identifies and rectifies faults • Responds effectively to hazards, risks and emergencies • Analyses problems and applies appropriate remedial solutions • Performs test lift/shifts to ensure lift suitability • Resolves business disputes • Makes adjustments to processes and work plans to address problems that emerge during the heritage restoration • Devises approaches, implements and reflects on environmental and water, energy and resource efficiency management policies and procedures relevant to work site to improve environmental sustainability and shares alternative approaches as required
Initiative and enterprise	• Assesses thermal efficiency of buildings and reviews design solutions for effectiveness and compliance • Identifies opportunities for improved water management • Evaluates effective strategies for insulating structures • Develops waste management strategies and dispute resolution procedures • Assesses restoration possibilities • Identifies environmental and resource efficiency improvements, applies knowledge about resource use to organisational activities and customer service and develops resource efficiency tools
Planning and organising	• Participates in effective implementation of organisation's operational plans • Identifies location and nature of restoration work and prepares site prior to commencing work • Identifies and organises resource requirements and obtains supply information • Collects, analyses and organises workplace information and

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Employability skill	Industry/enterprise requirements for this qualification include:
	data • Plans and organises inspections • Checks test certificates of materials to ensure materials meet refractory plan requirements • Plans and prepares for operation of tower crane and self-erecting tower crane
Self management	• Manages own performance to ensure required levels of service standards, work quality and professional competence • Manages work priorities and professional development • Uses feedback to improve own performance • Organises and completes daily work activities • Manages ongoing compliance with codes and standards
Learning	• Is open to new ideas and techniques • Seeks feedback on personal performance • Uses information effectively to improve work performance • Learns from colleagues as part of effective teamwork • Contributes to the learning of others by ensuring that workers are informed of required application of codes and standards
Technology	• Uses and operates a range of tools and equipment correctly and safely • Properly starts up, operates and shuts down equipment • Carries out pre- and post-operational checks on equipment and machines • Performs tools and equipment maintenance as required • Operates office equipment • Uses computer equipment and relevant software • Uses cameras

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

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- 15 units of competency:
  - 4 common core units
  - all core units for one of the following streams:
    - heritage restoration (six units)
    - refractory bricklaying (two units)
    - crane operations (two units)
    - rigging (two units)
- elective units (number to take the total number of units completed to 15).

The elective units may be selected as follows:

- all electives may be selected from the list below
- two of the required number of elective units may be selected from a Certificate III, IV or Diploma qualification in another endorsed Training Package or within CPC08 Construction, Plumbing and Services Training Package, ensuring the industry context of the qualification is maintained.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

Common

BSBOHS404B	Contribute to the implementation of strategies to control OHS risk
CPCCBC4004A	Identify and produce estimated costs for building and construction projects
CPCCBC4012B	Read and interpret plans and specifications
CPCCBC4034A	Apply codes and standards to building trade and services contracting

Heritage restoration stream

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CPCCBC4035A	Initiate the heritage works process
CPCCBC4036A	Prepare to undertake the heritage restoration process
CPCCBC4037A	Prepare drawings for heritage works
CPCCBC4038A	Prepare work plans for restoration work
CPCCBC4039A	Undertake the heritage restoration process
CPCCBC4040A	Prepare report for heritage restoration work

Refractory bricklaying stream

CPCCBC4041A	Undertake preparations for refractory work
CPCCBC4042A	Construct a fire brick wall and arch using refractory materials

Crane operations stream

CPCCLTC4001A	Licence to operate a tower crane
CPCCLTC4002A	Licence to operate a self-erecting tower crane

Rigging stream

CPCCLRG4001A	Licence to perform rigging advanced level
CPCCLSF4001A	Licence to erect, alter and dismantle scaffolding advanced level

Elective units

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BSBCUS301B	Deliver and monitor a service to customers
BSBWOR402A	Promote team effectiveness
BSBITU201A	Produce simple word processed documents
BSBITU202A	Create and use spreadsheets
BSBITU301A	Create and use databases
BSBMGT403A	Implement continuous improvement
BSBPMG404A	Apply quality management techniques
BSBPMG407A	Apply risk management techniques
BSBSMB401A	Establish legal and risk management requirements of small business
BSBWRT401A	Write complex documents
CPCCBC4019A	Apply sustainable building design principles to water management systems
CPCCBC4020A	Build thermally efficient and sustainable structures
CPCCBC4021A	Minimise waste on the building and construction site
CPCCBC4024A	Resolve business disputes
CPCCBC4025A	Manage personal work priorities and professional development
CPCCBC4043A	Operate a self-erecting tower crane
CPCCBC4044A	Operate a tower crane
CPCCBC4045A	Perform advanced rigging
CPCCBC4046A	Erect and dismantle advanced scaffolding
CPCCBC4047A	Quality assure fire-rated lining systems
CPCCBC4051A	Supervise asbestos removal
CPCCLRG3002A	Licence to perform rigging intermediate level
CPCCLSF3001A	Licence to erect, alter and dismantle scaffolding intermediate level

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CPCCOHS1001A	Work safely in the construction industry
CPCSUS4001A	Implement and monitor environmentally sustainable work practices
HLTHIR403C	Work effectively with culturally diverse clients and co-workers
TLILIC3006A	Licence to operate a non-slewing mobile crane (greater than 3 tonnes capacity)
TLILIC3008A	Licence to operate a slewing mobile crane (up to 20 tonnes)
TLILIC4009A	Licence to operate a slewing mobile crane (up to 60 tonnes)
TLILIC4010A	Licence to operate a slewing mobile crane (up to 100 tonnes)
TLILIC4011A	Licence to operate a slewing mobile crane (over 100 tonnes)

Custom Content Section

Not applicable.

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CPC40708 Certificate IV in Building and Construction (Trade Contracting)

Modification History

Revised qualification deemed equivalent to CPC40708
Core and elective units revised resulting in a number of unit identifier changes

Description

This qualification is designed to meet the needs of trade contractors who manage trade contracting businesses.

Occupational titles may include:

- Trade contractor.

The qualification has core unit of competency requirements that cover common skills for the construction industry.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Additional units of competency may be required to meet builder registration requirements in various States and Territories.

Pathways Information

Not applicable.

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Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:
Communication	• Interprets a range of complex and technical documents, including relevant regulatory, legislative and licensing requirements, codes and standards, plans, drawings and specifications, schedules, site files, contracts, orders and organisational policies and procedures • Analyses and evaluates reports and reference materials • Provides clear and accurate information to customers about the construction process and requirements and contracts • Communicates effectively with a range of relevant parties through a range of media • Articulates complex ideas clearly • Understands relevant definitions, terminology, symbols and language • Negotiates contracts as well as conflict and dispute resolution • Prepares documents, including construction contracts, plans, sketches and drawings and specifications, reports, tenders, schedules, building applications and submissions and file notes • Reports and records project costs • Maintains and checks logs, records and documents • Analyses a range of data, including company and stakeholder resource consumption and waste product volumes
Teamwork	• Coordinates a range of team members and activities • Seeks expert advice where appropriate • Works collaboratively with relevant stakeholders • Understands various stakeholders' roles • Relates positively to fellow workers and the management team • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities
Problem solving	• Performs various calculations relating to rise and fall amounts, estimating resource acquisition and costs, comparisons of alternative water management systems; waste management minimisation strategies; and thermal efficiency

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Employability skill	Industry/enterprise requirements for this qualification include:
	• Takes action to minimise contract penalties • Identifies and rectifies faults • Responds effectively to hazards, risks and emergencies • Analyses problems and applies remedial solutions • Resolves business disputes • Deals with contract variations • Takes action to minimise contract penalties • Analyses rejected building applications and determines the likely success of an appeal or a resubmission • Devises approaches, implements and reflects on environmental and water, energy and resource efficiency management policies and procedures relevant to work site to improve environmental sustainability and shares alternative approaches as required
Initiative and enterprise	• Acts with initiative and foresight to ensure legal requirements are applied accurately • Develops compliant, alternative solutions to construction problems • Evaluates properties of construction materials and selects appropriate materials based on evaluation • Identifies opportunities for improved water management • Evaluates effective strategies for insulating structures • Develops waste management strategies and dispute resolution procedures • Identifies environmental and resource efficiency improvements, applies knowledge about resource use to organisational activities and customer service and develops resource efficiency tools
Planning and organising	• Plans and coordinates various work operations • Prepares project schedule • Participates in effective implementation of organisation's operational plans • Plans and organises on-site activities and implements procedures associated with building and construction work • Identifies and organises resource requirements and obtains supply information • Supervises various administrative and work processes, including payments

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Employability skill	Industry/enterprise requirements for this qualification include:
	• Collects, analyses and organises workplace information and data • Plans and organises inspections • Organises testing of construction materials to ensure suitability
Self management	• Manages own performance to ensure required levels of service standards, work quality and professional competence • Manages work priorities and professional development • Uses feedback to improve own performance • Organises and completes daily work activities
Learning	• Is open to new ideas and techniques • Seeks feedback on personal performance • Uses information effectively to improve work performance • Learns from colleagues as part of effective teamwork
Technology	• Operates office equipment and computers • Uses digital cameras • Uses technology to improve efficiency and effectiveness of managing work

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 15 units of competency:
  - 10 core units
  - 5 elective units.

The elective units are to be chosen as follows:

- up to 5 units from general elective units
- up to 3 units from qualifications in CPC08 or another current Training Package or state accredited course, provided the integrity of the AQF alignment is ensured, they

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contribute to a valid, industry-supported vocational outcome, and that no more than:

- 2 units are from a Certificate IV qualification
- 1 unit is from a Certificate III or Diploma qualification.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

BSBCUS301B	Deliver and monitor a service to customers
BSBSMB406A	Manage small business finances
BSBWOR401A	Establish effective workplace relationships
CPCCBC4002A	Manage occupational health and safety in the building and construction workplace
CPCCBC4004A	Identify and produce estimated costs for building and construction projects
CPCCBC4005A	Produce labour and material schedules for ordering
CPCCBC4008B	Conduct on-site supervision of building and construction projects
CPCCBC4012B	Read and interpret plans and specifications
CPCCBC4024A	Resolve business disputes
CPCCBC4034A	Apply codes and standards to building trade and services contracting

Elective units

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BSBWOR402A	Promote team effectiveness
BSBITU201A	Produce simple word processed documents
BSBITU202A	Create and use spreadsheets
BSBITU301A	Create and use databases
BSBMGT403A	Implement continuous improvement
BSBPMG404A	Apply quality management techniques
BSBPMG407A	Apply risk management techniques
BSBPMG510A	Manage projects
BSBSMB401A	Establish legal and risk management requirements of small business
BSBSMB402A	Plan small business finances
BSBSMB404A	Undertake small business planning
BSBSMB405B	Monitor and manage small business operations
BSBWRT401A	Write complex documents
CPCCBC4003A	Select and prepare a construction contract
CPCCBC4007A	Plan building or construction work
CPCCBC4010B	Apply structural principles to residential low rise constructions
CPCCBC4011B	Apply structural principles to commercial low rise constructions
CPCCBC4013A	Prepare and evaluate tender documentation
CPCCBC4017A	Arrange resources and prepare for the building or construction project
CPCCBC4019A	Apply sustainable building design principles to water management systems
CPCCBC4020A	Build thermally efficient and sustainable structures
CPCCBC4021A	Minimise waste on the building and construction site
CPCCBC4025A	Manage personal work priorities and professional development

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CPCCBC4031A	Process client requirements
CPCCBC4032A	Apply contract law to sales processes
CPCCBC4051A	Supervise asbestos removals
CPCCOHS1001A	Work safely in the construction industry
CPCSUS4001A	Implement and monitor environmentally sustainable work practices
HLTHIR403C	Work effectively with culturally diverse clients and co-workers
TAEDEL402A	Plan, organise and facilitate learning in the workplace

Custom Content Section

Not applicable.

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CPC40808 Certificate IV in Swimming Pool and Spa Building

Modification History

Revised qualification deemed equivalent to CPC40808
Core and elective units revised resulting in a number of unit identifier changes

Description

This qualification provides an outcome in trade contracting for swimming pool and spa construction.

Occupational titles may include:

- Swimming pool and spa builder.

The qualification has core unit of competency requirements that cover common supervision and planning skills for the construction industry, as well as elective units common to a range of Certificate IV in Building and Construction qualifications.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Additional units of competency may be required to meet registration requirements in various States and Territories.

Pathways Information

Not applicable.

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Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:
Communication	• Communicates OHS policies and procedures • Participates in ensuring compliance with standards, regulations and policies • Communicates effectively with a range of relevant parties through a range of media • Establishes on-site communication systems • Articulates complex ideas clearly • Interprets and applies information from a range of complex and technical documents, including relevant regulatory, legislative and licensing requirements, codes and standards, plans, drawings and specifications, schedules, site files, contracts, orders and organisational policies and procedures • Analyses and evaluates reports and reference materials • Understands relevant definitions, terminology, signs, symbols and language • Maintains and checks logs, records and documents • Prepares a range of documents, including construction contracts, plans, sketches and drawings and specifications, reports, tenders, schedules, applications and file notes • Reports and records hazards and risks and project costs • Negotiates conflict and dispute resolution • Analyses a range of data, including company and stakeholder resource consumption and waste product volumes
Teamwork	• Conducts briefings with team members • Keeps team informed of work practices, quality requirements and required actions • Relates positively to fellow workers and the management team • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities • Works collaboratively with relevant stakeholders • Understands various stakeholders' roles • Seeks expert advice where appropriate
Problem solving	• Assesses the structural integrity of a range of swimming pool and spa structures • Performs various calculations relating to rise and fall

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Employability skill	Industry/enterprise requirements for this qualification include:
	amounts, estimating resource acquisition and costs, measurement of levels, heights and gradients, structural analysis, drawing dimensions, comparisons of alternative water management systems, waste management minimisation strategies, thermal efficiency and rated capacity and working load limits • Examines tools and equipment prior to use for damage, missing components or other defects • Identifies and rectifies faults • Responds effectively to hazards, risks and emergencies • Analyses problems and applies appropriate remedial solutions • Resolves business disputes • Deals with customer complaints and disputes • Devises approaches, implements and reflects on environmental and water, energy and resource efficiency management polices and procedures relevant to work site to improve environmental sustainability and shares alternative approaches as required
Initiative and enterprise	• Evaluates properties of swimming pool and spa building materials and selects appropriate materials based on evaluation • Develops compliant, alternative solutions to construction problems • Assesses thermal efficiency of buildings and reviews design solutions for effectiveness and compliance • Identifies opportunities for improved water management • Evaluates effective strategies for insulating structures • Develops waste management strategies and dispute resolution procedures • Identifies environmental and resource efficiency improvements, applies knowledge about resource use to organisational activities and customer service, and develops resource efficiency tools
Planning and organising	• Plans and coordinates various work operations • Prepares project schedules • Participates in effective implementation of organisation's operational plans • Plans and organises on-site activities and implements

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Employability skill	Industry/enterprise requirements for this qualification include:
	procedures associated with building and construction work • Identifies and organises resource requirements and obtains supply information • Supervises various administrative and work processes, including claims and payments, insurance coverage, payroll systems and tax systems • Collects, analyses and organises workplace information and data • Plans and organises inspections • Organises testing of swimming pools and spa building materials to ensure suitability • Identifies and uses mechanisms to inform workers of required application of codes and standards
Self management	• Manages own performance to ensure required levels of service standards, work quality and professional competence • Manages work priorities and professional development • Uses feedback to improve own performance • Organises and completes daily work activities • Manages ongoing compliance with codes and standards
Learning	• Is open to new ideas and techniques • Seeks feedback on personal performance • Uses information effectively to improve work performance • Learns from colleagues as part of effective teamwork • Contributes to the learning of others by ensuring that workers are informed of required application of codes and standards
Technology	• Operates office equipment • Uses computer equipment and relevant software • Uses cameras • Uses a range appropriate tools and equipment, including technical instruments and surveying equipment • Assesses new and emerging building technologies for their application to the construction process • Uses a range of tools and equipment, including technical instruments and surveying equipment

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Employability skill	Industry/enterprise requirements for this qualification include:
	• Maintains tools and equipment as required • Uses technology to improve efficiency and effectiveness of managing work

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 18 units of competency:
  - 17 core units
  - 1 elective unit.

The elective unit from a Certificate IV qualification in another endorsed Training Package or within CPC08 Construction, Plumbing and Services Training Package, ensuring the industry context of the qualification is maintained.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

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BSBCUS301B	Deliver and monitor a service to customers
BSBSMB406A	Manage small business finances
CPCCBC4002A	Manage occupational health and safety in the building and construction workplace
CPCCBC4003A	Select and prepare a construction contract
CPCCBC4004A	Identify and produce estimated costs for building and construction projects
CPCCBC4005A	Produce labour and material schedules for ordering
CPCCBC4007A	Plan building or construction work
CPCCBC4008B	Conduct on-site supervision of building and construction projects
CPCCBC4009B	Apply legal requirements to building and construction projects
CPCCBC4012B	Read and interpret plans and specifications
CPCCBC4014A	Prepare simple building sketches and drawings
CPCCBC4018A	Apply site surveys and set-out procedures to building and construction projects
CPCCBC4024A	Resolve business disputes
CPCCBC4034A	Apply codes and standards to building trade and services contracting
CPCCBC4048A	Apply building codes and standards to the construction process for swimming pools and spas
CPCCBC4049A	Apply structural principles to construction of swimming pools and spas
CPCCBC4050A	Select, procure and store construction materials for swimming pools and spa projects

Elective units

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BSBITU201A	Produce simple word processed documents
BSBITU202A	Create and use spreadsheets
BSBITU301A	Create and use databases
BSBMGT403A	Implement continuous improvement
BSBPMG404A	Apply quality management techniques
BSBPMG407A	Apply risk management techniques
BSBPMG510A	Manage projects
BSBSMB401A	Establish legal and risk management requirements of small business
BSBSMB402A	Plan small business finances
BSBSMB404A	Undertake small business planning
BSBSMB405B	Monitor and manage small business operations
BSBWOR401A	Establish effective workplace relationships
BSBWOR402A	Promote team effectiveness
BSBWRT401A	Write complex documents
CPCCBC4013A	Prepare and evaluate tender documentation
CPCCBC4017A	Arrange resources and prepare for the building or construction project
CPCCBC4019A	Apply sustainable building design principles to water management systems
CPCCBC4020A	Build thermally efficient and sustainable structures
CPCCBC4021A	Minimise waste on the building and construction site
CPCCBC4025A	Manage personal work priorities and professional development
CPCCBC4031A	Process client requirements
CPCCBC4032A	Apply contract law to sales processes
CPCCBC4051A	Supervise asbestos removal

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CPCCOHS1001A	Work safely in the construction industry
CPCSUS4001A	Implement and monitor environmentally sustainable work practices
HLTHIR403C	Work effectively with culturally diverse clients and co-workers
TAEDEL402A	Plan, organise and facilitate learning in the workplace

Custom Content Section

Not applicable.

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CPC40912 Certificate IV in Plumbing and Services

Modification History

Revised qualification deemed equivalent to CPC40912

- one new elective unit added to the fire services stream (CPCPFS4027A Commission fire sprinkler systems)
- elective units updated to equivalent versions:
  - CPCPGS4011C Design and size consumer gas installations
  - CPCPGS4023B Install, commission and service Type B gas appliances
- imported elective unit BSBPMG510A updated to current version (BSBPMG522A Undertake project work)

Minor editorial correction to Title.

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Description

This qualification provides an outcome for:

- experienced fire operators with responsibility for project design and supervision (Fire services stream)
- experienced plumbing service operators with responsibility for project design and supervision (Air conditioning and mechanical services stream)
- plumbers who manage a plumbing business (Plumbing and services – Management stream)
- specialist plumbing services tradespersons and operators seeking to deepen their technical skills (Plumbing and services – Operations stream)
- specialist hydraulic consultants (Hydraulic services design stream).

Occupational titles may include:

- Plumbing contractor
- Fire services supervisor
- Air conditioning technician
- Specialist hydraulic designer.

The qualification has core and elective unit of competency requirements that cover common skills for the plumbing industry, as well as the four specialist streams and a range of elective options.

The plumbing industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

No applicable.

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Licensing/Regulatory Information

This is a licensed occupation. Check with relevant state and territory licensing and regulatory authorities. State and territory jurisdictions may have different regulatory requirements.

Entry Requirements

See Packaging rules for entry requirements related to various streams.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:
Communication	• Interprets a range of complex documents, including relevant regulatory, legislative, licensing and registration requirements; codes and standards; drawings and specifications; industry definitions and terminology; contracts; plans and diagrams; job specifications; manufacturer specifications and technical manuals; design specifications; and industrial relations policies • Understands industry terminology • Communicates effectively with a range of relevant parties through a range of media • Prepares a range of documents, including reports, file notes, drawings and sketches, building applications and submissions; compressed air system specifications; testing and commissioning schedules; and operation and maintenance manuals • Uses active listening skills to seek clarification where needed • Facilitates site meetings • Negotiates conflict and dispute resolution
Teamwork	• Seeks expert advice where appropriate • Supervises others' work and monitors work processes • Plans and sequences work in conjunctions with others • Participates in professional networks and associations
Problem solving	• Performs various calculations and measurements relating to comparisons of alternative water management systems; waste management minimisation strategies; and materials and designs for compressed air systems • Identifies and rectifies faults • Deals with contract variations • Coordinates a range of team members and activities • Reviews design solutions for effectiveness and compliance • Deals with customer complaints and disputes
Initiative and enterprise	• Identifies building sites from location drawings • Identifies typical faults and problems and takes necessary remedial action • Uses creative design and drafting skills • Identifies opportunities for improved water management

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- Evaluates effective strategies for insulating structures
- Designs compressed air systems
- Develops waste management strategies and dispute resolution procedures

Planning and organising

- Gathers required tools and equipment
- Ensures coordinated development of drawings
- Supervises various administrative and work processes, including claims and payments, insurance coverage, payroll systems and tax systems
- Arranges resources and prepares for the building or construction project
- Plans and arranges building applications and approvals
- Ensures current building codes and standards are applied
- Plans and sets out work
- Plans waste management strategies
- Scopes extent of work required and plans and details relevant systems and layouts

Self management

- Manages own performance to ensure required levels of service standards, work quality and professional competence, and compliance with relevant codes and standards
- Manages work priorities and professional development
- Maintains required standard of personal fitness, hygiene and grooming
- Uses feedback to improve own performance

Learning

- Uses appropriate mechanisms to inform others of applicable standards and codes
- Applies training agreement provisions

Technology

- Uses information technology skills to operate office equipment and computers
- Uses digital cameras
- Uses CAD software to produce and manage architectural drawing and template files
- Uses relevant hydraulic design systems software
- Commissions fire alarm and detection systems and gas appliances
- Checks relevant tools and equipment for serviceability
- Understands basic electrical theory and the types,

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characteristics, uses and limitations of electrical/electronic componentry and control systems
- Designs compressed air systems using computer software

Packaging Rules

Fire services stream

To achieve this qualification, the candidate must demonstrate competency in:

- 15 units of competency:
  - 8 core units
  - 7 elective units.

The units must be completed as follows:

- all four common core units
- all four core units shared between air conditioning and mechanical services stream and fire services
- seven elective units, ensuring that any licensing requirements are addressed.

Of these seven electives:

- at least four units must be selected from the pool of elective units in the fire services stream
- up to two units may be selected from a Certificate IV qualification in another endorsed Training Package or from the core or elective units of another stream within the Certificate IV in Plumbing and Services, ensuring both the integrity of the AQF alignment and the industry context of the qualification are maintained
- one unit may be selected from Certificate III or Diploma Plumbing and Services qualifications
- no more than three units may be selected from the common pool of elective units.

Air conditioning and mechanical services stream

To achieve this qualification, the candidate must demonstrate competency in:

- 15 units of competency:
  - 8 core units
  - 7 elective units.

The units must be completed as follows:

- all four common core units
- all four core units shared between air conditioning and mechanical services stream and fire services

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- seven elective units, ensuring that any licensing requirements are addressed.

Of these seven electives:

- at least four units must be selected from the pool of elective units in the air conditioning and mechanical services stream
- up to two of the seven units may be selected from a Certificate IV qualification in another endorsed Training Package or from the core or elective units of another stream within the Certificate IV in Plumbing and Services, ensuring both the integrity of the AQF alignment and the industry context of the qualification are maintained
- one of the seven units may be drawn from Certificate III or Diploma Plumbing and Services qualifications
- no more than three units may be selected from the common pool of elective units.

Plumbing and services – Management stream

Industry considers it appropriate for people seeking to complete Certificate IV in Plumbing and Services – Management stream to hold a relevant Certificate III qualification in the industry.

To achieve this qualification, the candidate must demonstrate competency in:

- 15 units of competency:
  - 10 core units
  - 5 elective units.

The units must be completed as follows:

- all four common core units
- all six core units (Plumbing and services – Management stream)
- five elective units, ensuring that any licensing requirements are addressed.

Of these five electives:

- up to five units may be selected from the pool of elective units in the Plumbing and services – Management stream
- two of the five units may be selected from a Certificate IV qualification in another endorsed Training Package or from the core or elective units of another stream within the Certificate IV in Plumbing and Services, ensuring both the integrity of the AQF alignment and the industry context of the qualification are maintained
- one of the five units may be drawn from Certificate III or Diploma Plumbing and Services qualifications
- no more than three units may be selected from the pool of elective units common to all streams.

Plumbing and services – Operations stream

This stream has an entry requirement of the completion of a relevant trade qualification or equivalent.

To achieve this qualification, the candidate must demonstrate competency in:

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- 15 units of competency:
  - 12 core units
  - 3 elective units.

The units must be completed as follows:

- all four common core units
- all eight core units (Plumbing and services – Operations stream)
- three elective units, ensuring that any licensing requirements are addressed.

Of these three electives:

- up to three units may be selected from the pool of elective units in the Plumbing and services – Operations stream
- two of the three units may be selected from a Certificate IV qualification in another endorsed Training Package or from the core or elective units of another stream within the Certificate IV in Plumbing and Services, ensuring both the integrity of the AQF alignment and the industry context of the qualification are maintained
- one of the three units may be drawn from Certificate III or Diploma Plumbing and Services qualifications
- no more than three units may be selected from the pool of elective units common to all streams.

Hydraulic services design stream

To achieve this qualification, the candidate must demonstrate competency in:

- 15 units of competency:
  - 10 core units
  - 5 elective units.

The units must be completed as follows:

- all four common core units
- all six core units in the hydraulic services design stream
- five elective units.

Of these five electives:

- at least two units must be selected from the pool of elective units in the hydraulic services design stream
- one of the five units may be selected from a Certificate IV qualification in another endorsed Training Package, ensuring both the integrity of the AQF alignment and the industry context of the qualification are maintained
- one of the five units may be drawn from the Diploma of Hydraulic Services Design qualification
- no more than three units may be selected from the common pool of elective units.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with

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prerequisite unit requirements available in this Training Package for this purpose.

Core units

Common

BSBOHS403B	Identify hazards and assess OHS risks
CPCCBC4012B	Read and interpret plans and specifications
CPCPCM4011A	Carry out work-based risk control processes
CPCPCM4012A	Estimate and cost work

Fire services, air conditioning and mechanical services streams

BSBCUS301B	Deliver and monitor a service to customers
CPCCBC4015A	Prepare specifications for all construction works
CPCPCM4013A	Produce 2-D architectural drawings using CAD software
CPCPCM4014A	Prepare simple sketches and drawings

Plumbing and services – Management stream

BSBCUS301B	Deliver and monitor a service to customers
BSBSMB401A	Establish legal and risk management requirements of small business
BSBSMB402A	Plan small business finances
BSBSMB404A	Undertake small business planning
BSBSMB405B	Monitor and manage small business operations
CPCCBC4034A	Apply codes and standards to building trade and services contracting

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Plumbing and services – Operations stream

BSBSMB401A	Establish legal and risk management requirements of small business
CPCPDR4011B	Design and size sanitary drainage systems
CPCPDR4012B	Design and size stormwater drainage systems
CPCPDR4013B	Design and size domestic treatment plant disposal systems
CPCPGS4011C	Design and size consumer gas installations
CPCPRF4011B	Design and size roof drainage systems
CPCPSN4011B	Design and size sanitary plumbing systems
CPCPWT4011B	Design and size heated and cold water services and systems

Plumbing and services – Hydraulic services design stream

CPCCBC4034A	Apply codes and standards to building trade and services contracting
CPCPDR4011B	Design and size sanitary drainage systems
CPCPDR4012B	Design and size stormwater drainage systems
CPCPDR4013B	Design and size domestic treatment plant disposal systems
CPCPSN4011B	Design and size sanitary plumbing systems
CPCPWT4011B	Design and size heated and cold water services and systems

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Elective units

All streams

BSBINN301A	Promote innovation in a team environment
BSBITU201A	Produce simple word processed documents
BSBITU202A	Create and use spreadsheets
BSBITU301A	Create and use databases
BSBLED401A	Develop teams and individuals
BSBMGT403A	Implement continuous improvement
BSBPMG404A	Apply quality management techniques
BSBWRT401A	Write complex documents
CPCCBC4002A	Manage occupational health and safety in the building and construction workplace
CPCCBC4024A	Resolve business disputes
CPCCBC4025A	Manage personal work priorities and professional development
CPCSUS4001A	Implement and monitor environmentally sustainable work practices
HLTHIR403C	Work effectively with culturally diverse clients and co-workers

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Fire services stream

BSBWOR402A	Promote team effectiveness
BSBPMG407A	Apply risk management techniques
BSBPMG522A	Undertake project work
BSBSMB401A	Establish legal and risk management requirements of small business
BSBSMB402A	Plan small business finances
BSBSMB404A	Undertake small business planning
BSBSMB405B	Monitor and manage small business operations
BSBSMB406A	Manage small business finances
BSBWOR401A	Establish effective workplace relationships
CPCCBC4008B	Conduct on-site supervision of building and construction projects
CPCCBC4017A	Arrange resources and prepare for the building or construction project
CPCCBC4026A	Arrange building applications and approvals
CPCCBC4034A	Apply codes and standards to building trade and services contracting
CPCPFS4021A	Commission domestic and residential fire suppression sprinkler systems
CPCPFS4022A	Commission and maintain special hazard fire suppression systems
CPCPFS4023A	Commission fire system pumpsets
CPCPFS4024A	Design residential and domestic fire sprinkler systems
CPCPFS4025A	Commission fire alarm and detection system interface devices
CPCPFS4026A	Commission firefighting appliances
CPCPFS4027A	Commission fire sprinkler systems
TAEDEL402A	Plan, organise and facilitate learning in the workplace

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Air conditioning and mechanical services stream

BSBPMG407A	Apply risk management techniques
BSBPMG522A	Undertake project work
BSBSMB407A	Manage a small team
BSBSMB401A	Establish legal and risk management requirements of small business
BSBSMB402A	Plan small business finances
BSBSMB404A	Undertake small business planning
BSBSMB405B	Monitor and manage small business operations
BSBSMB406A	Manage small business finances
BSBWOR401A	Establish effective workplace relationships
CPCCBC4008B	Conduct on-site supervision of building and construction projects
CPCCBC4017A	Arrange resources and prepare for the building or construction project
CPCCBC4019A	Apply sustainable building design principles to water management systems
CPCCBC4020A	Build thermally efficient and sustainable structures
CPCCBC4021A	Minimise waste on the building and construction site
CPCCBC4026A	Arrange building applications and approvals
CPCCBC4034A	Apply codes and standards to building trade and services contracting
CPCPGS4011C	Design and size consumer gas installations
CPCPGS4022A	Service Type A gas appliances
CPCPGS4023B	Install, commission and service Type B gas appliances
CPCPMS4011B	Design, size and lay out heating and cooling systems
CPCPMS4022A	Commission air and water systems
CPCPMS4023A	Design compressed air systems

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CPCPWT4011B	Design and size heated and cold water services and systems
CPCPWT4022A	Commission and maintain backflow prevention devices
CPCPWT4023A	Commission and maintain hot and heated water temperature control devices
TAEDEL402A	Plan, organise and facilitate learning in the workplace

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Plumbing and services – Management stream

BSBPMG407A	Apply risk management techniques
BSBPMG522A	Undertake project work
BSBSMB407A	Manage a small team
BSBWOR401A	Establish effective workplace relationships
CPCCBC4008B	Conduct on-site supervision of building and construction projects
CPCCBC4009B	Apply legal requirements to building and construction projects
CPCCBC4017A	Arrange resources and prepare for the building or construction project
CPCCBC4019A	Apply sustainable building design principles to water management systems
CPCCBC4020A	Build thermally efficient and sustainable structures
CPCCBC4021A	Minimise waste on the building and construction site
CPCCBC4026A	Arrange building applications and approvals
CPCPCM4013A	Produce 2-D architectural drawings using CAD software
CPCPCM4014A	Prepare simple sketches and drawings
CPCPDR4011B	Design and size sanitary drainage systems
CPCPDR4012B	Design and size stormwater drainage systems
CPCPDR4013B	Design and size domestic treatment plant disposal systems
CPCPFS4024A	Design residential and domestic fire sprinkler systems
CPCPGS4011C	Design and size consumer gas installations
CPCPGS4022A	Service Type A gas appliances
CPCPGS4023B	Install, commission and service Type B gas appliances
CPCPMS4011B	Design, size and lay out heating and cooling systems
CPCPMS4022A	Commission air and water systems

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CPCPRF4011B	Design and size roof drainage systems
CPCPSN4011B	Design and size sanitary plumbing systems
CPCPWT4011B	Design and size heated and cold water services and systems
CPCPWT4022A	Commission and maintain backflow prevention devices
CPCPWT4023A	Commission and maintain hot and heated water temperature control devices
TAEDEL402A	Plan, organise and facilitate learning in the workplace

Plumbing and services – Operations stream

BSBCUS301B	Deliver and monitor a service to customers
CPCCBC4019A	Apply sustainable building design principles to water management systems
CPCCBC4020A	Build thermally efficient and sustainable structures
CPCCBC4021A	Minimise waste on the building and construction site
CPCCBC4034A	Apply codes and standards to building trade and services contracting
CPCPFS4024A	Design residential and domestic fire sprinkler systems
CPCPGS4022A	Service Type A gas appliances
CPCPGS4023B	Install, commission and service Type B gas appliances
CPCPMS4011B	Design, size and lay out heating and cooling systems
CPCPMS4022A	Commission air and water systems
CPCPMS4023A	Design compressed air systems
CPCPWT4022A	Commission and maintain backflow prevention devices
CPCPWT4023A	Commission and maintain hot and heated water temperature control devices

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Plumbing and services – Hydraulic services design stream

BSBPMG407A	Apply risk management techniques
BSBPMG522A	Undertake project work
BSBSMB407A	Manage a small team
BSBWOR401A	Establish effective workplace relationships
CPCPCM4013A	Produce 2-D architectural drawings using CAD software
CPCPCM4014A	Prepare simple sketches and drawings
CPCPFS4024A	Design residential and domestic fire sprinkler systems
CPCPGS4011C	Design and size consumer gas installations
TAEDEL402A	Plan, organise and facilitate learning in the workplace

Custom Content Section

Not applicable.

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CPC41013 Certificate IV in Demolition

Modification History

This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

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Description

This qualification is designed to meet the needs of project engineers, project managers, demolition supervisors and leading hands responsible for the oversight of a team of demolition workers undertaking specialist demolition work on large public, commercial, industrial or residential buildings, structures and installations, including chemical processing plants which may exceed 15 metres in height.

Occupational titles could include:

- Demolition supervisor
- Site supervisor (Demolition).

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

The qualification is suitable for an Australian Apprenticeship pathway.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to demolition work in different States and Territories. Candidates are advised to consult with the relevant regulatory authorities.

Entry Requirements

There are no entry requirements.

Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification

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Employability skill	Industry/enterprise requirements for this qualification
Communication	• Communicates work health and safety (WHS) policies and procedures • Participates in ensuring compliance with standards, regulations and policies • Communicates effectively with a range of relevant parties through a range of media • Establishes on-site communication systems • Facilitates site meetings • Articulates complex ideas clearly • Interprets a range of complex and technical documents, including relevant regulatory, legislative, licensing and registration requirements, codes and standards, plans, drawings and specifications, contracts, schedules, site files, development approvals, and organisational policies and procedures • Analyses and evaluates reports and reference materials • Understands relevant definitions, terminology, symbols and language • Maintains and checks logs, records and documents • Prepares a range of documents, including demolition plans, safe work method statements and reports • Reports and records hazards and risks • Negotiates conflict and dispute resolution • Analyses a range of data, including company and stakeholder resource consumption and waste volumes
Teamwork	• Conducts briefings with team members • Coordinates a range of team members and activities • Keeps team informed of work practices, quality requirements and required actions • Relates positively to fellow workers and the management team • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities • Seeks expert advice where appropriate • Works collaboratively with relevant stakeholders • Understands various stakeholders' roles • Supervises and checks others' work, monitors work processes and ensures safe work practices • Discusses ideas with team members
Problem solving	• Assesses structural integrity of residential and commercial low rise buildings during the demolition process • Performs various calculations relating to estimating resource acquisition and costs; measurement of levels, heights and gradients; structural analysis; drawing dimensions; waste management

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Employability skill	Industry/enterprise requirements for this qualification
	strategies; rated capacity and working load limits; and budgeting and forecasting • Examines tools and equipment prior to use for damage, missing components or other defects • Identifies and rectifies faults • Responds effectively to hazards, risks and emergencies • Analyses problems and applies appropriate remedial solutions • Resolves business disputes • Deals with customer complaints and disputes • Devises approaches, implements and reflects on environmental and water, energy and resource efficiency management policies and procedures relevant to work site to improve environmental sustainability and shares alternative approaches as required
Initiative and enterprise	• Develops compliant solutions to demolition process problems • Identifies risks and hazards • Develops materials recycling, waste management strategies and dispute resolution procedures • Identifies environmental and resource efficiency improvements, applies knowledge about resource use to organisational activities and customer service and develops resource efficiency tools • Monitors sites for signs of undiscovered hazards
Planning and organising	• Plans and coordinates various work operations • Prepares project schedules • Participates in effective implementation of organisation's operational plans • Plans and organises on-site activities and implements procedures associated with demolition work • Identifies and organises resource requirements and obtains supply information • Collects, analyses and organises workplace information and data • Plans and organises site inspections • Organises HAZMAT audits of sites prior to work commencement
Self-management	• Manages own performance to ensure required levels of service standards, work quality and professional competence • Manages work priorities and professional development • Uses feedback to improve own performance • Organises and completes daily work activities
Learning	• Is open to new ideas and techniques • Seeks feedback on personal performance • Uses information effectively to improve work performance • Learns from colleagues as part of effective teamwork

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Employability skill	Industry/enterprise requirements for this qualification
Technology	• Operates office equipment • Uses computer equipment and relevant software • Uses cameras • Assesses new and emerging technologies for application to demolition processes • Uses a range of tools and equipment, including technical instruments • Maintains tools and equipment as required • Uses technology to improve efficiency and effectiveness of managing work

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Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 15 units of competency:
  - 8 core units
  - 7 elective units.

The elective units must ensure the integrity of the AQF alignment and contribute to a valid, industry-supported vocational outcome and are to be chosen as follows:

- a minimum of 4 and up to 7 units from the elective units listed below
- up to 3 units may be chosen from other Certificate III and IV qualifications in CPC08 or another current Training Package or accredited course.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

BSBWOR402A	Promote team effectiveness
CPCCBC4002A	Manage occupational health and safety in the building and construction workplace
CPCCBC4012B	Read and interpret plans and specifications
CPCCBC5018A	Apply structural principles to the construction of medium rise buildings
CPCCDE4001A	Plan and prepare for activities on demolition sites
CPCCDE4002A	Plan and supervise demolition work to minimise environmental and public health and safety impact
CPCCDE4003A	Supervise individual activities on demolition sites
CPCCDE4004A	Finalise demolition activities and supervise property handover

Elective units

CPCCBC4004A	Identify and produce estimated costs for building and construction projects
CPCCBC4008B	Conduct on-site supervision of building and construction projects

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CPCCBC4009B	Apply legal requirements to building and construction projects
CPCCBC4014A	Prepare simple building sketches and drawings
CPCCBC5014A	Conduct asbestos assessment associated with removal
CPCCBC4024A	Resolve business disputes
CPCCBC4025A	Manage personal work priorities and professional development
CPCCBC4051A	Supervise asbestos removal
CPCCBC6014A	Apply structural principles to the construction of large, high rise and complex buildings
CPCCOHS1001A	Work safely in the construction industry
RIICWD503A	Prepare work zone traffic management plan
RIIOHS302A	Implement traffic management plan

Custom Content Section

Not applicable.

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CPC50210 Diploma of Building and Construction (Building)

Modification History

Revised qualification deemed equivalent to CPC50210

- two new sustainability elective units added:
  - CPCSUS5002A Develop action plans to retrofit existing buildings for energy efficiency
  - CPCSUS5003A Manage energy efficient building methods and strategies
- minor editorial changes to elective packaging rules, without changing intent

Description

This qualification is designed to meet the needs of builders, including selecting contractors, overseeing the work and its quality, and liaising with clients.
The builder may also be the appropriately licensed person with responsibility under the relevant building licensing authority in the State or Territory. Builder licensing varies across States and Territories and additional requirements to attainment of this qualification may be required.
Occupational title may include:

- Builder.

The qualification has core unit of competency requirements that cover common skills for the construction industry.
The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all included units of competency to be delivered in this context.
Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.
Additional units of competency may be required to meet builder registration requirements in various States and Territories.

Pathways Information

Not Applicable

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Licensing/Regulatory Information

Occupational licenses are required nationally.
Refer to Description

Entry Requirements

Not Applicable

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:
Communication	• Analyses, evaluates and interprets a range of complex and technical documents, including relevant regulatory, legislative, licensing requirements, codes and standards, plans, drawings and specifications, contracts, reports, reference materials, building approvals, awards and workplace agreements • Maintains and reports records and information • Understands relevant definitions, terminology, symbols and language • Communicates effectively with a range of relevant parties and provides expert testimony • Establishes site communication procedures • Prepares complex business documents, including project expenditure schedules and reports, such as technical and legal reports, drawings and project briefs • Advises others regarding their obligations as well as company procedures • Negotiates dispute resolution • Sketches service layouts • Implements feedback systems
Teamwork	• Demonstrates leadership within work teams and business units • Collaboratively and effectively develops and implements operational plans • Supervises work processes and systems, and delegates to others as required • Works with others to overcome problems and achieve outcomes • Establishes and maintains effective working relationships • Seeks advice from senior management as required • Works collaboratively with relevant stakeholders • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities
Problem solving	• Analyses construction, environmental management, and energy conservation problems and applies appropriate and compliant remedial solutions • Assesses structural integrity of medium rise buildings • Ensures processes that identify faults and required remedial action • Develops strategies to address project delays

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- Performs various complex calculations relating to cost-benefit analysis, rise and fall amounts, pessimistic overdraft requirements, statistical analysis, costs, set out of construction work, structural analysis and service installations
- Analyses reasons for cost variations and takes remedial action
- Establishes and implements dispute resolution procedures
- Maintains site safety and manages risks
- Provides advice on dispute resolution
- Uses and analyses data in decision making

Initiative and enterprise

- Develops and initiates strategies to use resources effectively
- Ensures effective systems' development
- Implements effective project quality management and continuous improvement processes
- Recommends improvements to environmental management and energy conservation plans
- Develops strategies that maximise resource effectiveness
- Develops and reviews workplace sustainability policy

Planning and organising

- Supervises planning processes and organisation of on-site building or construction work projects, including instituting procedures and systems
- Develops sound and safe practices in relation to structural procedures on site
- Coordinates and manages construction and demolition processes
- Monitors building or construction costing systems
- Manages preparation of project expenditure schedules
- Supervises materials' procurement systems
- Manages selection, engagement and performance of building and construction contractors
- Administers legal obligations of building or construction contracts
- Establishes construction work policies, practices and procedures
- Prepares and implements environmental management and energy conservation plans, including workplace sustainability policy
- Advises and coordinates design process and obtains planning approval

Self management

- Manages own performance to ensure required levels of service standards, work quality and professional competence
- Manages work priorities and professional development
- Uses feedback to improve own performance
- Takes responsibility as required by the work role
- Uses discretion and judgement when required in complex

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environments
- Deals with contingencies

Learning
- Is open to new ideas and techniques
- Seeks feedback on personal performance
- Uses information effectively to improve work performance
- Learns from colleagues as part of effective teamwork
- Manages induction and pre-engagement training processes

Technology
- Operates office equipment
- Uses computer equipment and relevant software
- Understands building construction materials and technologies
- Understands construction equipment and its use
- Operates and tests levelling equipment
- Uses technology to improve efficiency and effectiveness of managing work

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 18 units of competency:
  - 13 core units
  - 5 elective units.

The elective units must be selected as follows:

- a minimum of 3 elective units must be from Group A units below
- a maximum of 2 further elective units may be from Group B units below
- 1 elective unit may be from Diploma level in from CPC08 or another endorsed Training Package, provided that the industry context of the qualification is maintained
- 2 elective units may be from any Certificate IV in CPC08
- 1 elective unit may be from any Advanced Diploma in CPC08.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

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BSBOHS504B	Apply principles of OHS risk management
BSBPMG505A	Manage project quality
BSBPMG508A	Manage project risk
CPCCBC4001A	Apply building codes and standards to the construction process for low rise building projects
CPCCBC4003A	Select and prepare a construction contract
CPCCBC4004A	Identify and produce estimated costs for building and construction projects
CPCCBC4010B	Apply structural principles to residential low rise constructions
CPCCBC4013A	Prepare and evaluate tender documentation
CPCCBC5001B	Apply building codes and standards to the construction process for medium rise building projects
CPCCBC5002A	Monitor costing systems on medium rise building and construction projects
CPCCBC5003A	Supervise the planning of on-site medium rise building or construction work
CPCCBC5010B	Manage construction work
CPCCBC5018A	Apply structural principles to the construction of medium rise buildings

Elective units – Group A

CPCCBC5004A	Supervise and apply quality standards to the selection of building and construction materials
CPCCBC5005A	Select and manage building and construction contractors
CPCCBC5006B	Apply site surveys and set-out procedures to medium rise building projects
CPCCBC5007B	Administer the legal obligations of a building or construction contractor
CPCCBC5009A	Identify services layout and connection methods to medium rise

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	construction projects
CPCCBC5011A	Manage environmental management practices and processes in building and construction
CPCCBC5012A	Manage the application and monitoring of energy conservation and management practices and processes
CPCCBC5013A	Develop professional technical and legal reports on building and construction projects
CPCSUS5001A	Develop workplace policies and procedures for sustainability
CPCSUS5002A	Develop action plans to retrofit existing buildings for energy efficiency
CPCSUS5003A	Manage energy efficient building methods and strategies

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Elective units – Group B

BSBCUS501C	Manage quality customer service
BSBFIM501A	Manage budgets and financial plans
BSBHRM509A	Manage rehabilitation or return to work programs
BSBINN502A	Build and sustain an innovative work environment
BSBITA401A	Design databases
BSBITU402A	Develop and use complex spreadsheets
BSBITU404A	Produce complex desktop published documents
BSBLED502A	Manage programs that promote personal effectiveness
BSBMGT502B	Manage people performance
BSBMGT515A	Manage operational plan
BSBRSK501B	Manage risk
BSBSLS502A	Lead and manage a sales team
BSBWOR501B	Manage personal work priorities and professional development
BSBWOR502B	Ensure team effectiveness
CPCCBC4005A	Produce labour and material schedules for ordering
CPCCBC4006B	Select, procure and store construction materials for low rise projects
CPCCBC4009B	Apply legal requirements to building and construction projects
CPCCBC4011B	Apply structural principles to commercial low rise constructions
CPCCBC4012B	Read and interpret plans and specifications
CPCCBC4014A	Prepare simple building sketches and drawings
CPCCBC4018A	Apply site surveys and set-out procedures to building and construction projects
CPCCBC4024A	Resolve business disputes
CPCCBC5004A	Supervise and apply quality standards to the selection of building and

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	construction materials
CPCCBC5005A	Select and manage building and construction contractors
CPCCBC5006B	Apply site surveys and set-out procedures to medium rise building projects
CPCCBC5007B	Administer the legal obligations of a building or construction contractor
CPCCBC5009A	Identify services layout and connection methods to medium rise construction projects
CPCCBC5011A	Manage environmental management practices and processes in building and construction
CPCCBC5012A	Manage the application and monitoring of energy conservation and management practices and processes
CPCCBC5013A	Develop professional technical and legal reports on building and construction projects
CPCCBC5014A	Conduct asbestos assessment associated with removal
CPCCOHS1001A	Work safely in the construction industry
CPPDSM5022A	Implement asset management plan

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CPC50308 Diploma of Building and Construction (Management)

Modification History

Revised qualification deemed equivalent to CPC50308
Elective units revised resulting in a number of unit identifier changes

Description

This qualification is designed to meet the needs of senior managers within building and construction firms.
Occupational titles may include:

- Project manager
- Construction manager
- Estimating manager
- Sales manager.

The qualification has core unit of competency requirements that cover common skills for the construction industry.
The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.
Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.
Additional units of competency may be required to meet builder registration requirements in various States and Territories.

Pathways Information

Not Applicable

Licensing/Regulatory Information

Not Applicable

Entry Requirements

Not Applicable

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:
Communication	• Analyses, evaluates and interprets a range of complex and technical documents, including relevant regulatory, legislative, licensing requirements, codes and standards, plans, drawings and specifications, contracts, reports, reference materials, building approvals, awards and workplace agreements • Maintains and reports records and information • Understands relevant definitions, terminology, symbols and language • Communicates effectively with a range of relevant parties and provides expert testimony • Establishes site communication procedures • Prepares complex business documents, including project expenditure schedules, reports including technical and legal reports, drawings and project briefs • Advises others regarding their obligations as well as company procedures • Negotiates dispute resolution • Sketches service layouts • Implements feedback systems
Teamwork	• Demonstrates leadership within work teams and business units • Collaboratively and effectively develops and implements operational plans • Supervises work processes and systems, and delegates to others as required • Works with others to overcome problems and achieve outcomes • Establishes and maintains effective working relationships • Seeks advice from senior management as required • Works collaboratively with relevant stakeholders • Relates to people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities
Problem solving	• Analyses construction, environmental management, energy conservation problems and applies appropriate and compliant remedial solutions • Assesses structural integrity of medium rise buildings

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	• Ensures processes that identify faults and the required remedial action • Develops strategies to address project delays • Performs various complex calculations relating to cost-benefit analysis, rise and fall amounts, pessimistic overdraft requirements, statistical analysis, costs, set out of construction work, structural analysis and service installations • Analyses reasons for cost variations and takes remedial action • Establishes and implements dispute resolution procedures • Maintains site safety and manages risks • Provides advice on dispute resolution • Uses and analyses data in decision making
Initiative and enterprise	• Develops and initiates strategies to use resources effectively • Ensures effective systems' development • Implements effective project quality management and continuous improvement processes • Recommends improvements to environmental management and energy conservation plans • Develops strategies that maximise resource effectiveness • Develops and reviews workplace sustainability policy
Planning and organising	• Supervises planning processes and organisation of on-site building or construction work projects, including instituting procedures and systems • Develops sound and safe practices in relation to structural procedures on site • Coordinates and manages construction and demolition processes • Monitors building or construction costing systems • Manages preparation of project expenditure schedules • Supervises materials' procurement systems • Manages selection, engagement and performance of building and construction contractors • Administers legal obligations of building or construction contracts • Establishes construction work policies, practices and procedures • Prepares and implements environmental management and energy conservation plans, including workplace sustainability policy

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	• Advises and coordinates the design process and obtains planning approval
Self management	• Manages own performance to ensure required levels of service standards, work quality and professional competence • Manages work priorities and professional development • Uses feedback to improve own performance • Takes responsibility as required by the work role • Uses discretion and judgement when required in complex environments • Deals with contingencies
Learning	• Is open to new ideas and techniques • Seeks feedback on personal performance • Uses information effectively to improve work performance • Learns from colleagues as part of effective teamwork • Manages induction and pre-engagement training processes
Technology	• Operates office equipment • Uses computer equipment and relevant software • Understands building construction materials and technologies • Understands construction equipment and its use • Operates and tests levelling equipment • Uses technology to improve efficiency and effectiveness of managing work

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 12 units of competency:
  - 5 core units
  - 7 elective units.

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The elective units are to be chosen as follows:

- up to 7 units from general elective units
- up to 3 units from qualifications in CPC08 or another current Training Package or state accredited course, provided the integrity of the AQF alignment is ensured, they contribute to a valid, industry-supported vocational outcome, and that no more than:
  - 2 units from a Diploma qualification
  - 1 unit from a Certificate IV
  - 1 unit from an Advanced Diploma qualification.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

BSBFIM501A	Manage budgets and financial plans
BSBHRM402A	Recruit, select and induct staff
BSBMGT515A	Manage operational plan
BSBOHS504B	Apply principles of OHS risk management
BSBWOR502B	Ensure team effectiveness

Elective units

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BSBCUS501C	Manage quality customer service
BSBHRM509A	Manage rehabilitation or return to work programs
BSBINN502A	Build and sustain an innovative work environment
BSBITA401A	Design databases
BSBITU402A	Develop and use complex spreadsheets
BSBITU404A	Produce complex desktop published documents
BSBLED502A	Manage programs that promote personal effectiveness
BSBMGT502B	Manage people performance
BSBPMG504A	Manage project costs
BSBPMG505A	Manage project quality
BSBPMG507A	Manage project communications
BSBPMG508A	Manage project risk
BSBSLS502A	Lead and manage a sales team
BSBWOR501B	Manage personal work priorities and professional development
CPCCBC5001B	Apply building codes and standards to the construction process for medium rise building projects
CPCCBC5002A	Monitor costing systems on medium rise building and construction projects
CPCCBC5003A	Supervise the planning of on-site medium rise building or construction work
CPCCBC5004A	Supervise and apply quality standards to the selection of building and construction materials
CPCCBC5005A	Select and manage building and construction contractors
CPCCBC5006B	Apply site surveys and set-out procedures to medium rise building projects
CPCCBC5007B	Administer the legal obligations of a building or construction contractor
CPCCBC5009A	Identify services layout and connection methods to medium rise

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	construction projects
CPCCBC5010B	Manage construction work
CPCCBC5011A	Manage environmental management practices and processes in building and construction
CPCCBC5012A	Manage the application and monitoring of energy conservation and management practices and processes
CPCCBC5013A	Develop professional technical and legal reports on building and construction projects
CPCCBC5018A	Apply structural principles to the construction of medium rise buildings
CPCSUS5001A	Develop workplace policies and procedures for sustainability
CPPDSM5022A	Implement asset management plan

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CPC50412 Diploma of Plumbing and Services

Modification History

Revised qualification deemed not equivalent to CPC50408
A number of core and elective units updated and deemed not equivalent to previous version
Elective units revised resulting in a number of unit identifier changes

Description

This qualification provides an outcome for:

- specialist and senior plumbers, fire services professionals and air conditioning and mechanical services professionals with advanced technical skill requirements
- experienced professionals who are pursuing management roles within the plumbing and services industry.

Occupational titles may include:

- Senior plumber
- Fire services technician
- Air conditioning and mechanical services technician
- Plumbing manager.

The qualification has core and elective unit of competency requirements that cover common skills for the plumbing industry, as well as specialist streams:

The plumbing industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

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Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:
Communication	• Interprets a range of complex documents, including plans and specifications, technical and hand drawings, charts, material safety data sheets, briefs, legislative and regulatory requirements, industry codes and standards, manufacturers' requirements, trade and technical manuals, and programs, • Drafts detailed system specifications, including material, jointing and installation requirements; testing and commissioning schedules; project expenditure schedules; operations and maintenance manuals; safety procedures; control requirements; local authority inspection requirements for hydraulic systems; compliance reports; final cost reports; water and energy audit reports; technical plumbing system reports; and various quality control check lists • Understands industry terminology, industry estimating and costing systems, and financial principles • Communicates effectively with a range of people, including suppliers, staff, clients, subcontractors, local authority personnel, and negotiates industrial relations issues • Researches documentation relevant to systems' design • Gives clear hand and voice signals • Negotiates and prepares sewer contracts, and varies and documents schedules as required
Teamwork	• Works with others to plan, coordinate and complete tasks • Supervises sewerage system installation • Supervises staff in identifying building or construction costs • Works interactively with others to achieve a safe work site • Uses appropriate dispute resolution procedures
Problem solving	• Conducts cost-benefit analysis of material and design options • Performs complex financial calculations, including rise and fall calculations • Resolves problems relating to project delays • Performs various calculations relating to measuring sanitary plumbing and drainage systems, velocities and flow, pressures, water volumes, catchment areas and run off, sizing of water heaters, pipe sizes and storage capacities

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Employability skill	Industry/enterprise requirements for this qualification include:
	• Identifies typical faults and takes corrective action • Identifies site safety and environmental health risks and takes preventative measures • Rectifies service clashes through design modifications
Initiative and enterprise	• Designs complex sanitary plumbing and drainage systems; cold water systems; stormwater and roof drainage systems; hot water systems; sewerage systems; rising mains systems; pump stations; fire compliant ducting systems and hydraulic services; water storage and sprinkler systems; smoke alarm systems; fire hydrant and hose reel systems; hydronic heating and cooling systems; gas bulk storage systems; industrial gas systems; gas reticulation systems; solar water heating systems; grey water use systems; rainwater collection, storage, distribution and re-use systems; irrigation systems; trade waste pre-treatment systems; pump systems; siphonic stormwater drainage systems; vacuum sewerage systems • Identifies strategies for conserving and recycling water, harvesting and re-using rainwater • Evaluates alternative solutions to improve plumbing systems and makes appropriate recommendations • Effectively implements project quality management
Planning and organising	• Scopes the extent of work required • Monitors building or construction costs, including identifying critical phases of project expenditure and cash flows • Plans systems' pipework layout and details systems' componentry as well as duct and penetration plans • Ensures current building codes and standards are applied • Coordinates service penetrations • Organises site meetings • Manages hazard management procedures • Establishes and reviews OHS, welfare and risk management processes • Establishes policy on plant and equipment usage • Manages personnel, resources, supply of materials and on-site operations

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Employability skill	Industry/enterprise requirements for this qualification include:
Self management	• Manages own work to ensure compliance with relevant codes and standards
Learning	• Establishes safety induction processes • Uses appropriate mechanisms to inform others of applicable standards and codes
Technology	• Uses computers to design and detail plumbing and drainage systems; cold water systems; stormwater and roof drainage systems; hot water systems; fire sprinkler systems; fire hydrant and hose reel systems; hydronic systems; gas bulk storage systems; industrial gas systems; gas reticulation systems; solar water heating systems; grey water use systems; rainwater collection, storage, distribution and re-use systems; irrigation systems; trade waste pre-treatment systems; pump systems; siphonic stormwater drainage systems; and vacuum sewerage systems • Understands technological principles in the design of hydraulic systems; cold water reticulation and hydrant/hose reel systems; sewer systems; hydronic systems; gas bulk storage systems; industrial gas systems; gas reticulation systems; solar water heating systems; grey water use systems; rainwater collection, storage, distribution and re-use systems; irrigation systems; trade waste pre-treatment systems; pump systems; siphonic stormwater drainage systems; vacuum sewerage systems; and trade waste pre-treatment systems • Uses calculators and two-way radios • Uses relevant tools and equipment

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in 12 units of competency, which are to be chosen as follows:

- 2 common core units
- all units from one of the following three options:
  - Fire services:

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    - 4 Group A Fire services core units
    - 6 elective units
  - Plumbing and services management:
    - 5 Group B Plumbing and services management core units
    - 5 elective units
  - Air conditioning and mechanical services:
    - 4 Group C Air conditioning and mechanical services core units
    - 6 elective units.

The elective units chosen:

- could include:
  - core units not already chosen from Groups A, B or C
  - Group D General electives
  - no more than 2 units from Group B Plumbing and services management electives
- may be from other qualifications in CPC08 or another current Training Package or state accredited course, provided no more than:
  - 1 unit is from a Diploma qualification
  - 1 unit is from a Certificate IV qualification
- should ensure the integrity of the AQF alignment, and contribute to a valid, industry-supported vocational outcome.

NB: The plumbing and services stream has an entry requirement of the Certificate IV in Plumbing and Services or an equivalent qualification.
Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

Common core

BSBOHS504B	Apply principles of OHS risk management
BSBPMG505A	Manage project quality

Group A Fire services: core

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CPCCSV6010A	Apply fire technology to buildings up to three storeys
CPCPFS5010A	Design fire-compliant hydraulic services
CPCPFS5011A	Design fire sprinkler systems
CPCPFS5012A	Design fire hydrant and hose reel systems

Group B Plumbing and services management: core

CPCPCM5010A	Design complex sanitary plumbing and drainage systems
CPCPCM5011A	Design complex cold water systems
CPCPCM5012A	Design complex stormwater and roof drainage systems
CPCPCM5013A	Design complex (non-solar) heated water systems
CPCPCM5014A	Design sewer infrastructure systems

Group C Air conditioning and mechanical services: core

CPCPMS5010A	Design steam generation and distribution systems
CPCPMS5011A	Design air conditioning and ventilation systems
CPCPMS5012A	Design sound attenuated hydraulic services
CPCPMS5013A	Design hydronic heating and cooling systems

Elective units

Group B Plumbing and services management: electives

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BSBCUS501C	Manage quality customer service
BSBFIM501A	Manage budgets and financial plans
BSBPMG508A	Manage project risk
BSBMGT515A	Manage operational plan
BSBWOR502B	Ensure team effectiveness
CPCCBC4034A	Apply codes and standards to building trade and services contracting
CPCCBC5002A	Monitor costing systems on medium rise building and construction projects
CPCCBC5010B	Manage construction work

Group D General electives

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CPCPPS5000B	Design gas bulk storage systems
CPCPPS5001B	Design industrial gas systems
CPCPPS5002B	Design gas reticulation systems
CPCPPS5009B	Analyse and report on technical plumbing systems
CPCPPS5011B	Coordinate services and penetrations within a building
CPCPPS5014A	Locate and maintain piping systems
CPCPPS5015B	Inspect plumbing and drainage systems
CPCPPS5023A	Design solar water heating systems
CPCPPS5024A	Conduct a water audit and identify water-saving initiatives
CPCPPS5025A	Design grey water re-use systems
CPCPPS5026A	Design rainwater collection, storage, distribution and re-use systems
CPCPPS5027A	Design irrigation systems
CPCPPS5028A	Design trade waste pre-treatment systems
CPCPPS5030A	Design pump systems
CPCPPS5032A	Design siphonic stormwater drainage systems
CPCPPS5033A	Design vacuum sewerage systems
CPCSUS5001A	Develop workplace policies and procedures for sustainability

Custom Content Section

Not applicable.

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CPC50509 Diploma of Fire Systems Design

Modification History

Revised qualification deemed equivalent to CPC50509
A number of elective units updated and deemed not equivalent to previous version
Elective units revised resulting in a number of unit identifier changes

Description

The Diploma of Fire Systems Design reflects and supports the role of fire systems designers who prepare detailed technical designs and documentation for water-based fire suppression systems and/or fire detection and occupant warning systems. The fire systems designs covered in this Diploma are those that meet the requirements of the Building Code of Australia or detailed designs prepared for alternative solutions designed or specified by a fire safety engineer. The Diploma of Fire Systems Design also includes a stream qualification for the annual certifier of fire systems.

Fire systems designers may enter the industry from a diverse range of occupations and sectors. They may choose to extend their careers by seeking to undertake subsequent higher education qualifications in related disciplines, including mechanical engineering and fire engineering.

The qualification has common core and elective unit of competency requirements that cover common skills for fire systems designers and certifiers, as well as specialist streams for:

- water-based systems
- detection and warning systems
- annual certifiers.
-

Pathways Information

Not Applicable

Licensing/Regulatory Information

Not Applicable

Entry Requirements

Not Applicable

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:
Communication	• Listening to, and communicating clearly with, colleagues, installers, maintainers, suppliers and contractors • Participating in meetings, such as negotiations with fire engineering consultant, architect, builder or other service contractors • Explaining the gravity of fire systems inspection findings • Letter writing, especially to formalise recognition of errors and conflicts on other drawings and agreements with other services • Writing reports • Initiating and running meetings with lead contractor and other service contractors • Drafting detailed system specifications, including material, installation requirements; testing and commissioning schedules; project expenditure schedules; operations and maintenance manuals; and various quality control checklists
Teamwork	• Developing constructive and cooperative working relationships with project team members, colleagues, suppliers, fitters and clients • Working with others to plan, coordinate and complete tasks
Problem-solving	• Negotiating solutions to design conflicts with other services • Conducting cost-benefit analysis of design options • Performing complex calculations, such as electrical and hydraulic calculations • Identifying site health risks and installation constraints and producing design solutions
Initiative and enterprise	• Producing cost-effective and workable detailed designs for fire systems • Proposing creative detailed design solutions to installation issues arising on-site • Proposing creative solutions to aesthetic requirements for fire systems installation • Developing personal methodologies for ensuring project quality and for incorporating process improvements • Managing detailed input to concurrent fire systems design projects at different stages of the process and with diverse sets of regulatory requirements
Planning and organising	• Defining the scope and hazard level of fire systems design projects • Planning the layout of fire systems designs

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Employability skill	Industry/enterprise requirements for this qualification include:
	• Setting up systems and checklists for ensuring a methodical approach to fire systems design projects • Gathering documentation required for fire systems design projects, including plans, specifications, drawings, legislation, codes and standards • Planning for the inspection of multiple fire systems (with different applicable standards) concurrently
Self-management	• Organising own work, including creating personal systems and checklists for planning, managing and checking work • Maintaining a professional detached authority
Learning	• Reading manuals and marketing information about new technologies, products and systems • Researching relevant legislation, standards and codes • Updating knowledge of products, software systems and technology • Researching competing technologies in new products and systems
Technology	• Reading and interpreting drawings, including architectural, structural, mechanical, hydraulic and electrical drawings • Reading manuals and marketing information about new technologies, products and systems • Using computer software to produce detailed designs for fire systems, manage project participation and conduct general personal business administration • Applying the principles of fire science, organic and inorganic chemistry, thermodynamics, hydraulics, fluid mechanics and electric and electronic theory • Using relevant tools and equipment, such as measuring tools and calculators

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 12 units of competency:
  - 4 core units
  - between 3 and 8 Group A, B or C elective units
  - up to 5 other elective units.

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The elective units are chosen as follows:

- all units from one of the following three options:
  - 8 units from Group A Water-based systems elective units
  - 5 units from Group B Detection and warning systems elective units
  - 4 units from Group C Annual certifier elective units
- provided the remaining elective units ensure the integrity of the AQF alignment; and contribute to a valid, industry-supported vocational outcome; they could include:
  - elective units not already chosen from Groups A, B or C
  - Group D general elective units:
  - 1 unit from a Diploma or higher qualification in CPC08 or another current Training Package or state accredited course
  - 1 unit from the Certificate IV in Plumbing and Services, Group A Fire Services units.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry
CPCSFS5001A	Define scope and hazard level of fire systems design projects
CPCSFS5002A	Research and interpret detailed fire systems design project requirements
CPCSFS5005A	Research and evaluate fire system technologies and components

Group A Water-based systems elective units

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CPCPCM4013A	Produce 2-D architectural drawings using CAD software
CPCSFS5003A	Develop plans and methodology for fire systems design projects
CPCSFS5006A	Create detailed designs for fire sprinkler systems
CPCSFS5007A	Create detailed designs for hydrant and hose reel systems
CPCSFS5009A	Create detailed designs for fire systems' water supplies
CPCSFS5010A	Provide documentation and support for fabrication of fire sprinkler systems
CPCSFS5011A	Provide design documentation and review and support fire system installation processes
CPCSFS5013A	Support commissioning processes and finalise fire systems design projects

Group B Detection and warning systems elective units

CPCPCM4013A	Produce 2-D architectural drawings using CAD software
CPCSFS5003A	Develop plans and methodology for fire systems design projects
CPCSFS5008A	Create detailed designs for fire detection and warning systems
CPCSFS5011A	Provide design documentation and review and support fire system installation processes
CPCSFS5013A	Support commissioning processes and finalise fire systems design projects

Group C Annual certifier elective units

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BSBAUD504B	Report on a quality audit
CPCCBC4012B	Read and interpret plans and specifications
CPCSFS5014A	Conduct annual fire systems certification inspections
CPCSFS5015A	Assess documentation for annual fire systems certification inspections

Group D General elective units

BSBCUS402B	Address customer needs
BSBCUS501C	Manage quality customer service
BSBOHS504B	Apply principles of OHS risk management
BSBPMG507A	Manage project communications
BSBPMG510A	Manage projects
CPCCBC4025A	Manage personal work priorities and professional development
CPCCBC4012B	Read and interpret plans and specifications
CPCCBC5009A	Identify services layout and connection methods to medium rise construction projects
CPCPCM4013A	Produce 2-D architectural drawings using CAD software
CPCPCM4014A	Prepare simple sketches and drawings
CPCCSV5009A	Assess the impact of fire on building materials
HLTHIR403C	Work effectively with culturally diverse clients and co-workers

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CPC50612 Diploma of Hydraulic Services Design

Modification History

Revised qualification deemed equivalent to CPC50612

- elective unit CPCPGS4011C Design and size consumer gas installations updated to equivalent version

Description

This qualification provides an outcome for:

- specialist hydraulic design consultants who design plumbing and services systems for residential and commercial buildings.

Occupational titles may include:

- Hydraulic design consultant.

The qualification has core and elective unit of competency requirements that cover common administration and plumbing industry skills plus specialist design competencies.

This qualification does not meet the competency requirements for plumbing registration or licensing.

The plumbing industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

NB: Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

Not applicable.

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Licensing/Regulatory Information

This qualification does not meet the competency requirements for plumbing registration or licensing.

Entry Requirements

This qualification has an entry requirement of CPC40912 Certificate IV in Plumbing and Services - Hydraulic services design stream, or an equivalent qualification.

Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:
Communication	• Interprets a range of complex documents, including plans and specifications, technical and hand drawings, charts, material safety data sheets, briefs, legislative and regulatory requirements, industry codes and standards, manufacturers' requirements, trade and technical manuals, and programs, • Drafts detailed system specifications, including material, jointing and installation requirements; testing and commissioning schedules; project expenditure schedules; operations and maintenance manuals; safety procedures; control requirements; local authority inspection requirements for hydraulic systems; compliance reports; final cost reports; water and energy audit reports; technical plumbing system reports; and various quality control check lists • Understands industry terminology, industry estimating and costing systems, and financial principles • Communicates effectively with a range of people, including suppliers, staff, clients, subcontractors, local authority personnel. • Researches documentation relevant to systems' design
Teamwork	• Works with others to plan, coordinate and complete tasks • Works interactively with others to achieve a safe work site • Uses appropriate dispute resolution procedures
Problem solving	• Conducts cost-benefit analysis of material and design options • Performs complex calculations • Resolves problems relating to project design issues • Performs various calculations relating to measuring sanitary plumbing and drainage systems, velocities and flow,

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	pressures, water volumes, catchment areas and run off, sizing of water heaters, pipe sizes and storage capacities • Identifies typical design faults and takes corrective action • Rectifies service clashes through design modifications
Initiative and enterprise	• Designs complex sanitary plumbing and drainage systems; cold water systems; stormwater and roof drainage systems; hot water systems; sewerage systems; rising mains systems; pump stations; fire compliant ducting systems and hydraulic services; water storage and sprinkler systems; smoke alarm systems; fire hydrant and hose reel systems; hydronic heating and cooling systems; gas bulk storage systems; industrial gas systems; gas reticulation systems; solar water heating systems; grey water use systems; rainwater collection, storage, distribution and re-use systems; irrigation systems; trade waste pre-treatment systems; pump systems; siphonic stormwater drainage systems; vacuum sewerage systems • Identifies strategies for conserving and recycling water, harvesting and re-using rainwater • Evaluates alternative solutions to improve plumbing systems and makes appropriate recommendations
Planning and organising	• Scopes the extent of work required • Monitors building or construction costs, including identifying critical phases of project expenditure and cash flows • Plans systems' pipework layout and details systems' componentry as well as duct and penetration plans • Ensures current building codes and standards are applied
Self management	• Manages own work to ensure compliance with relevant codes and standards
Learning	• Uses appropriate mechanisms to inform others of applicable standards and codes
Technology	• Uses computers to design and detail plumbing and drainage systems; cold water systems; stormwater and roof drainage systems; hot water systems; fire sprinkler systems; fire hydrant and hose reel systems; hydronic systems; gas bulk storage systems; industrial gas systems; gas reticulation systems; solar water heating systems; grey water use systems; rainwater collection, storage, distribution and re-use systems; irrigation systems; trade waste pre-treatment systems; pump systems; siphonic stormwater drainage systems; and vacuum sewerage systems • Understands technological principles in the design of hydraulic systems; cold water reticulation and hydrant/hose reel systems; sewer systems; hydronic systems; gas bulk

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	storage systems; industrial gas systems; gas reticulation systems; solar water heating systems; grey water use systems; rainwater collection, storage, distribution and re-use systems; irrigation systems; trade waste pre-treatment systems; pump systems; siphonic stormwater drainage systems; vacuum sewerage systems; and trade waste pre-treatment systems • Uses relevant hydraulic design systems software

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 34 units of competency:
  - 31 core units
  - 3 elective units.

One of the three elective units may be selected from a Diploma qualification from CPC08 or another current Training Package, or from the core or elective units of another stream within CPC50412 Diploma of Plumbing and Services, ensuring both the integrity of the Australian Qualification Framework (AQF) alignment and the industry context of the qualification are maintained.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

BSBITU201A	Produce simple word processed documents
BSBITU202A	Create and use spreadsheets
BSBITU301A	Create and use databases
BSBWRT401A	Write complex documents
CPCCBC4012B	Read and interpret plans and specifications
CPCCBC4034A	Apply codes and standards to building trade and services contracting
CPCPCM4013A	Produce 2-D architectural drawings using CAD software
CPCPCM4014A	Prepare simple sketches and drawings

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CPCPCM5010A	Design complex sanitary plumbing and drainage systems
CPCPCM5011A	Design complex cold water systems
CPCPCM5012A	Design complex stormwater and roof drainage systems
CPCPCM5013A	Design complex (non-solar) heated water systems
CPCPDR4011B	Design and size sanitary drainage systems
CPCPDR4012B	Design and size stormwater drainage systems
CPCPDR4013B	Design and size domestic treatment plant disposal systems
CPCPFS4024A	Design residential and domestic fire sprinkler systems
CPCPGS4011C	Design and size consumer gas installations
CPCPPS5000B	Design gas bulk storage systems
CPCPPS5001B	Design industrial gas systems
CPCPPS5002B	Design gas reticulation systems
CPCPPS5023A	Design solar water heating systems
CPCPPS5024A	Conduct a water audit and identify water-saving initiatives
CPCPPS5025A	Design grey water re-use systems
CPCPPS5026A	Design rainwater collection, storage, distribution and re-use systems
CPCPPS5028A	Design trade waste pre-treatment systems
CPCPPS5030A	Design pump systems
CPCPPS5032A	Design siphonic stormwater drainage systems
CPCPSN4011B	Design and size sanitary plumbing systems
CPCPWT4011B	Design and size heated and cold water services and systems
CPCSFS5001A	Define scope and hazard level of fire systems design projects
CPCSFS5007A	Create detailed designs for hydrant and hose reel systems

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Elective units

CPCPCM5014A	Design sewer infrastructure systems
CPCPFS5011A	Design fire sprinkler systems
CPCPMS5010A	Design steam generation and distribution systems
CPCPMS5011A	Design air conditioning and ventilation systems
CPCPMS5012A	Design sound attenuated hydraulic services
CPCPMS5013A	Design hydronic heating and cooling systems
CPCPPS5014A	Locate and maintain piping systems
CPCPPS5015B	Inspect plumbing and drainage systems
CPCPPS5027A	Design irrigation systems
CPCPPS5033A	Design vacuum sewerage systems
CPCSUS5001A	Develop workplace policies and procedures for sustainability

Custom Content Section

Not applicable.

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CPC60108 Advanced Diploma of Building Surveying

Modification History

Revised qualification deemed equivalent to CPC60108
Imported units updated to current version

Description

This qualification is designed to meet the needs of senior surveyors in the building and construction industry.

Occupational titles may include:

- Building surveyor
- Building certifier.

The qualification has core unit of competency requirements that cover specialist surveying skills for the construction industry. 24 core units in this qualification are also included in the CPC50108 Diploma of Building Surveying.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

Not Applicable

Licensing/Regulatory Information

Not Applicable

Entry Requirements

Not Applicable

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:

Communication	• Communicates effectively with a range of people, including staff, contractors and clients
	• Conducts community consultation
	• Articulates complex ideas clearly
	• Attends court and presents information
	• Understands relevant definitions, terminology, symbols and language
	• Analyses and evaluates reports and reference materials
	• Communicates effects of planning and construction to others
	• Records building planning and construction information
	• Reports data, findings, recommendations and strategies
	• Prepares a range of documentation, including research journals for producing building drawings, notices and information materials
	• Interprets a range of complex and technical documents, including relevant:
	• Produces drawings
	• Carries out complex calculations and measurements
	  • regulatory, legislative, licensing and organisational requirements
	  • codes and standards
	  • plans and specifications

Teamwork	• Works collaboratively with relevant stakeholders • Works with others to action tasks • Works with diverse groups and individuals
Problem solving	• Applies problem solving strategies across a range of areas, including evaluating materials and determining alternative solutions to construction problems • Conducts tests and uses results to make decisions • Uses and analyses complex data in decision making • Analyses problems and applies appropriate remedial solutions • Identifies complex faults and problems and takes necessary remedial action • Reviews feedback and takes appropriate action

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Employability skill	Industry/enterprise requirements for this qualification include:
	• Validates community consultation procedures
Initiative and enterprise	• Provides a leadership role in community consultation • Makes recommendations and strategies • Develops compliant, alternative solutions to construction problems • Identifies and evaluates environmental issues and impacts • Identifies and implements appropriate and diverse strategies for interacting with diverse communities. • Applies managerial principles, including quality assurance
Planning and organising	• Develops project scheduling • Collects, analyse and organises information • Schedules and conducts consultations • Manages time and priorities • Plans and organises resources • Coordinates activities with subcontractors
Self management	• Articulates own ideas and vision • Organises and completes daily work activities • Takes responsibility as required by work role, ensuring all legislative and organisational policies and procedures are followed • Manages own performance to ensure required levels of service standards, work quality and professional competence • Seeks and acts on feedback from stakeholders • Manages work priorities
Learning	• Uses information effectively to improve work performance • Identifies and assesses legislative, organisational and environmental requirements that impact on work system • Maintains knowledge of products and services
Technology	• Works with technology safely and according to workplace standards • Uses testing technology

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Employability skill	Industry/enterprise requirements for this qualification include:
	• Uses computers and relevant software for information gathering and analysis and completion of drawings, documentation and calculations • Uses and operates a range of tools and equipment correctly and safely • Uses technology, such as videos and computer simulations to present information • Uses technology to improve efficiency and effectiveness of managing work • Uses calculators

Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in 43 units of competency.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

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BSBADM506B	Manage business document design and development
BSBITS401B	Maintain business technology
BSBMGT502B	Manage people performance
CHCCOM403A	Use targeted communication skills to build relationships
CHCCOM504A	Develop, implement and promote effective communication techniques
CPCCSV5001A	Assess the construction of domestic scale buildings
CPCCSV5002A	Evaluate materials for construction of domestic scale buildings
CPCCSV5003A	Produce working drawings for residential buildings
CPCCSV5004A	Apply legislation to urban development and building controls
CPCCSV5005A	Apply footing and geomechanical design principles to domestic scale buildings
CPCCSV5006A	Assess construction faults in residential buildings
CPCCSV5007A	Undertake site surveys and set-out procedures for building projects
CPCCSV5008A	Apply building control legislation to building surveying
CPCCSV5009A	Assess the impact of fire on building materials
CPCCSV5010A	Interact with clients in a regulated environment
CPCCSV5011A	Apply building codes and standards to residential buildings
CPCCSV5012A	Assess timber-framed designs for one and two storey buildings
CPCCSV5013A	Apply principles of energy efficient design to buildings
CPCCSV5014A	Apply building surveying procedures to residential buildings
CPCCSV5015A	Assess structural requirements for domestic scale buildings
CPCCSV6001A	Assess the construction of buildings up to three storeys
CPCCSV6002A	Produce working drawings for buildings up to three storeys
CPCCSV6003A	Assess construction faults in buildings up to three storeys

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CPCCSV6004A	Apply footing and geomechanical design principles to buildings up to three storeys
CPCCSV6005A	Evaluate services layout and connection methods for residential and commercial buildings up to three storeys
CPCCSV6006A	Evaluate the use of concrete for residential and commercial buildings up to three storeys
CPCCSV6007A	Assess structural requirements for buildings up to three storeys
CPCCSV6008A	Apply building codes and standards to buildings up to three storeys
CPCCSV6009A	Implement performance-based codes and risk management principles for buildings up to three storeys
CPCCSV6010A	Apply fire technology to buildings up to three storeys
CPCCSV6011A	Apply legal procedures to building surveying
CPCCSV6012A	Facilitate community development consultation
CPCCSV6013A	Coordinate building refurbishment
CPCCSV6014A	Manage and plan land use
CPCCSV6015A	Analyse and present building surveying research information
CPCCSV6016A	Apply building surveying procedures to buildings up to three storeys
ICAICT102A	Operate word-processing applications
ICAICT103A	Use, communicate and search securely on the internet
ICAICT105A	Operate spreadsheet applications
ICAICT201A	Use computer operating systems and hardware
ICAICT210A	Operate database applications
LGAPLEM502A	Apply ecologically sustainable development principles to the built environment
LMFFT4010B	Identify and calculate production costs

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CPC60212 Advanced Diploma of Building and Construction (Management)

Modification History

Revised qualification deemed not equivalent to CPC60208
Change to core unit CPCCBC6004A deleted and replaced with CPCCBC6018A
Core and elective units revised resulting in a number of unit identifier changes

Description

This qualification is designed to meet the needs of builders, including selecting contractors, overseeing the work and its quality, and liaising with the client. The builder may also be the appropriately licensed person with responsibility under the relevant building licensing authority in the State or Territory.

The qualification also meets the needs of senior managers within building, construction and services firms typically working in larger organisations and managing more complex projects and processes.

Occupational titles may include:

- Construction manager.

The qualification has core unit of competency requirements that cover common skills for the construction industry.

The construction industry strongly affirms that training and assessment leading to recognition of skills must be undertaken in a real or very closely simulated workplace environment and this qualification requires all included units of competency to be delivered in this context.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Additional units of competency may be required to meet builder registration requirements in various States and Territories.

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Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

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Employability Skills Summary

Employability skill	Industry/enterprise requirements for this qualification include:
Communication	• Analyses, evaluates and interprets a range of complex and technical documents, including relevant regulatory, legislative, and licensing requirements, codes and standards, plans, drawings and specifications, invitations to tender, contracts and procurement reports • Discusses construction issues and compliance issues with relevant stakeholder • Maintains, checks, records and reports information • Understands relevant definitions, terminology, symbols and language • Interprets complex numerical information • Prepares complex business documents, including development proposals and feasibility studies, tenders, staff duty schedules, reports, project briefs, organisational policies, procedures and codes of conduct and strategic plans • Communicates effectively with a range of relevant parties • Negotiates project approvals • Interprets strategic and sometimes ambiguous information • Provides relevant legal, regulatory and administrative advice and feedback to colleagues as required • Evaluates resource ordering information for compliance • Establishes communication policies and principles, review and feedback systems, recording and evaluation systems, and documentation processes • Reads relevant publications to maintain contemporary industry knowledge
Teamwork	• Uses network contacts to generate business opportunities • Supervises and monitors performance of systems and individuals • Interacts with internal and external personnel • Manages relationships on legal matters • Facilitates meetings between client and teams • Maintains effective industrial relationships with subcontractors • Consults and works with industry professionals on construction projects • Coordinates input of expert advice where appropriate

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Employability skill	Industry/enterprise requirements for this qualification include:
Problem solving	• Analyses construction problems and applies appropriate and compliant remedial solutions • Assesses structural integrity of large, high rise and complex buildings • Performs various complex calculations relating to costings and returns, building designs' structural requirements and loads, effects of force and movement on structural elements, analysis of behaviours and properties of structural materials, quantitative analysis of market data and sensitivity analysis • Uses strategic level skills to conceptualise solutions to unique problems • Takes remedial action to address non-compliance issues • Addresses and resolves industrial relations issues • Deals effectively with procurement problems and delays • Conducts risk assessment of facilities management outcomes
Initiative and enterprise	• Develops effective and compliant design solutions and quality assurance processes • Generates and directs development of new projects • Identifies potential projects and develops feasibility studies • Demonstrates strong and decisive leadership • Facilitates implementation of various new management systems • Implements energy conservation strategies and cost saving practices • Develops and reviews workplace sustainability policy • Establishes and implements costing and construction documentation quality control systems • Formulates investment scenarios
Planning and organising	• Establishes processes to coordinate others' work • Manages project commissioning • Delegates and directs work activities • Selects and deploys resources to enable new project development • Establishes, maintains and reviews contract administration procedures and frameworks • Develops strategic plans for the development of contracts administration and facilities/asset management

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Employability skill	Industry/enterprise requirements for this qualification include:
	• Manages processes for legal obligations of a building or construction contract, including ensuring required licences are obtained and regulatory compliance is administered • Manages processes associated with tender development for major projects and resource procurement and acquisition for building or construction projects • Develops, plans and implements systems designed to manage environmental practices and processes, including workplace sustainability policy • Develops and implements estimating and tendering systems, building or construction planning processes • Plans, develops and implements building or construction, energy conservation and management practices and processes • Directs and manages design and development of the organisation's project planning system • Manages and administers development of documentation for building or construction projects • Applies structural principles to the planning of the erection and demolition of a structure and coordinates and manages the structural elements of the construction process • Gathers relevant information to conduct feasibility studies
Self management	• Understands organisational and professional procedures, ethical practices and business standards • Recognises limitations of own work role, responsibilities and professional abilities
Learning	• Ensures staff receive appropriate training and instruction in matters relating to insurance and taxation and are made aware of their responsibilities • Ensures staff are trained and managed to ensure that quality assurance practices and energy conservation and management practices are applied
Technology	• Operates office equipment, computers and electronic communication systems • Understands and applies new technologies in concrete

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Packaging Rules

To achieve this qualification, the candidate must demonstrate competency in:

- 10 units of competency:
  - 4 core units
  - 6 elective units.

The elective units are to be chosen as follows:

- up to 6 units from general elective units
- up to 2 units from qualifications in CPC08 or another current Training Package or state accredited course, provided the integrity of the AQF alignment is ensured, they contribute to a valid, industry-supported vocational outcome, and that no more than:
  - 1 unit is from a Diploma qualification
  - 1 unit is from an Advanced Diploma qualification.

Some units in this qualification may have prerequisite requirements, which must be met when packaging the qualification. Users are referred to the list of CPC08 units with prerequisite unit requirements available in this Training Package for this purpose.

Core units

BSBOHS603B	Analyse and evaluate OHS risk
CPCCBC6001B	Apply building codes and standards to the construction process for large building projects
CPCCBC6003A	Establish, maintain and review contract administration procedures and frameworks
CPCCBC6018A	Manage processes for complying with legal obligations of a building or construction contractor

Elective units

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BSBMGT617A	Develop and implement a business plan
BSBMKG609A	Develop a marketing plan
BSBRSK501B	Manage risk
CPCCBC6002A	Generate and direct the development of new projects
CPCCBC6005A	Manage tender developments for major projects
CPCCBC6006A	Manage the procurement and acquisition of resources for building or construction projects
CPCCBC6007A	Develop, plan and implement appropriate building or construction environmental management practices and processes
CPCCBC6008A	Develop and implement an appropriate estimating and tendering system
CPCCBC6009A	Develop, plan and implement an appropriate building or construction planning process
CPCCBC6010A	Plan, develop and implement building or construction energy conservation and management practices and processes
CPCCBC6011A	Establish systems to develop and monitor building and construction costs
CPCCBC6012A	Manage and administer development of documentation for building or construction projects
CPCCBC6013A	Evaluate materials for multi-storey buildings
CPCCBC6014A	Apply structural principles to the construction of large, high rise and complex buildings
CPCCBC6015A	Apply building surveying procedures
CPCCBC6016A	Assess construction faults in large building projects
CPCCBC6017A	Evaluate services layout and connection methods for the planning of large building projects
CPCSUS5001A	Develop workplace policies and procedures for sustainability
CPPDSM6002A	Conduct a property investment feasibility study
CPPDSM6008A	Develop strategic facilities management plan

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Custom Content Section

Not applicable.

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CPC70109 Vocational Graduate Certificate in Fire Systems Design Management

Modification History

Not Applicable

Description

The Vocational Graduate Certificate in Fire Systems Design Management reflects and supports the role of senior managers in the fire systems design sector who perform wide-ranging tasks while also exercising in-depth technical skills and knowledge, particularly in the area of special hazard fire suppression and detection systems.

Pathways Information

Not Applicable

Licensing/Regulatory Information

Not Applicable

Entry Requirements

Not Applicable

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Employability Skills Summary

EMPLOYABILITY SKILLS QUALIFICATION SUMMARY	
Employability skill	Industry/enterprise requirements for this qualification include:
Communication	• Consulting with and engaging industry colleagues, staff, customers and others who may be internal or external to the organisation • Researching, preparing and presenting high-level reports and plans pitched appropriately to the needs of the audience • Using clear and insightful verbal and non-verbal communication • Reading and interpreting a range of information relevant to job/role, including industry standards, regulations, Acts, legislation and policies • Presenting information to others at briefings and via other forms of communication • Negotiating with suppliers and customers • Fostering change • Negotiating effectively • Establishing and maintaining consultative processes
Teamwork	• Managing teams • Leading team effort towards identified goals • Liaising with relevant personnel • Engaging and working with specialist advisors and consultants
Problem solving	• Identifying long-term customer needs and matching service delivery responses to address these needs • Resolving work-related problems • Forming and testing assumptions in an effort to resolve problems • Implementing conflict resolution strategies • Identifying and avoiding breaches in compliance and rectifying causes • Quantifying the benefits of options and performing calculations to assist in solving problems
Initiative and enterprise	• Identifying business opportunities and building customer relationships • Thinking and acting proactively to solve problems and generate improved work practices and productivity • Identifying relevant sources of information and

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EMPLOYABILITY SKILLS QUALIFICATION SUMMARY	
	using them effectively • Adjusting quickly to changing situations • Leading project planning processes
Planning and organising	• Leading project and related business planning processes • Managing risks • Managing contracts, contractors and projects • Planning and organising own work tasks and those of a team • Planning and organising resources to meet deadlines • Time management • Determining schedules to ensure work is completed on time • Coordinating tasks and processes • Undertaking relevant research and evaluation to support work objectives
Self management	• Demonstrating capacity to be a self-starter and self motivated • Monitoring own work and adjusting accordingly to meet agreed standards and expectations • Managing own work area
Learning	• Taking responsibility for own learning • Undertaking self-development opportunities, including engaging with industry networks and participating in industry forums • Contributing to learning in the workplace • Maintaining up-to-date knowledge of policies, procedures and legislation which impact on council and individual performance • Obtaining feedback to identify ways to improve ongoing activities
Technology	• Using technology relevant to the job/role which may include conducting online research; using software applications to manage and undertake projects; using in-house applications to manage finances and planning and reporting processes • Adapting to the use of new technology as appropriate

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Packaging Rules

Packaging rules
To achieve this qualification, the candidate must demonstrate competency in 4 units drawn from the pool of units below.

Vocational Graduate Certificate Unit Pool	
Unit code	Unit title
CPCMCM7001A	Plan and manage complex projects
CPCMCM7002A	Manage the quality of projects and processes
CPCSFS7001A	Define scope of and initiate special hazard fire systems design projects
CPCSFS7002A	Analyse, design and evaluate complex special hazard fire systems
CPCSFS7003A	Develop and submit tenders for fire systems design solutions

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CPCSS00001 Lead a building, construction or plumbing and services team

Modification History

ISC update of formatting. No content changes.

Description

This skill set addresses the skills used by experienced tradespersons and operators who are moving into roles with additional responsibility and team leadership, typically in smaller businesses.

The skill set provides the team leadership and other skills to enable experienced site supervisors or builders to develop staff under their supervision.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

The completion of this skill set provides a pathway to a range of Certificate IV qualifications in CPC08, including credit towards the Certificate IV in Plumbing and Services.

Licensing/Regulatory Information

Not Applicable

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Skill Set Requirements

CPCCBC4002A	Manage occupational health and safety in the building and construction workplace
CPCCBC4009B	Apply legal requirements to building and construction projects
BSBWOR402A	Promote team effectiveness

Target Group

The skill set provides the team leadership and other skills to enable experienced site supervisors or builders to develop staff under their supervision.

Suggested words for Statement of Attainment

The suggested form of words for inclusion on a Statement of Attainment is: These units from CPC08 Construction, Plumbing and Services Training Package meet industry requirements for experienced tradespersons and operators working as building, construction or plumbing and services team leaders in the construction and plumbing and services industry.

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CPCSS00002 Manage complex building projects

Modification History

Addition of CPCCBC5001B Apply building codes and standards to the construction process for medium rise building projects to skill set requirement (prerequisite to CPCCBC5018A) to address its previous omission from the packaging rules, thereby increasing skill set requirement from three to four units

Units updated to current equivalent version

Description

This skill set addresses the skills used by builders to manage complex and diverse building projects. The range and depth of skills required of builders is amplified by the size and complexity of the projects on which they work.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

The completion of this skill set provides a pathway to a Diploma qualification in CPC08.

Licensing/Regulatory Information

Not Applicable

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Skill Set Requirements

CPCCBC5001B	Apply building codes and standards to the construction process for medium rise building projects
CPCCBC5003A	Supervise the planning of on-site medium rise building or construction work
CPCCBC5007B	Administer the legal obligations of a building or construction contractor
CPCCBC5018A	Apply structural principles to the construction of medium rise buildings

Target Group

This skill set is a bridge for experienced builders already operating at the Certificate IV level who are preparing to undertake larger scale projects which may entail developing additional skills and also, possibly, seeking a higher level of builder's licence in the relevant State or Territory. This skill set may be supported by continuing professional development programs which are increasingly required of builders.

Suggested words for Statement of Attainment

The suggested form of words for inclusion on a Statement of Attainment is: These units from CPC08 Construction, Plumbing and Services Training Package meet industry requirements for experienced builders preparing to undertake complex building projects requiring additional administrative and technical skills and a higher level of builder's licence in some jurisdictions.

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CPCSS00003 Undertake trade contracting

Modification History

Units updated to current equivalent version

Description

This skill set addresses the skills used by experienced tradespersons operating as sole traders or with limited staff who contract their services to builders. They may be in the early stages of developing and growing their newly established businesses.

Completion of the general induction training program specified by the National Code of Practice for Induction Training for Construction Work (ASCC 2007) is required before entering a construction work site. Achievement of unit CPCCOHS1001A covers this requirement.

Pathways Information

The completion of this skill set provides a pathway to a range of Certificate IV qualifications in CPC08.

Licensing/Regulatory Information

Not Applicable

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Skill Set Requirements

CPCCBC4004A	Identify and produce estimated costs for building and construction projects
CPCCBC4024A	Resolve business disputes
CPCCBC4034A	Apply codes and standards to building trade and services contracting
BSBCUS301B	Deliver and monitor a service to customers
BSBOHS403B	Identify hazards and assess OHS risks
BSBSMB401A	Establish legal and risk management requirements of small business
BSBSMB406A	Manage small business finances

Plus one of the following units:

BSBWRT401A	Write complex documents
CPCCBC4025A	Manage personal work priorities and professional development
CPCCBC4031A	Process client requirements

Target Group

The skill set provides an initial set of business skills to support contractors' existing trade skills.

Suggested words for Statement of Attainment

The suggested form of words for inclusion on a Statement of Attainment is: These units from CPC08 Construction, Plumbing and Services Training Package meet industry requirements for experienced tradespersons performing trade contracting work in the construction industry.

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BSBPMG411A Apply project quality-management techniques

Modification History

Release	Comments
Release 1	This version first released with *BSB07 Business Services Training Package Version 8.0*. Replaces BSBPMG404A Apply quality management techniques.

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to enhance project outcomes through contributing to quality planning, applying quality policies and procedures, and contributing to continuous improvement in projects.

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Application of the Unit

This unit applies to a project practitioner working in a project support role.

The individual may be operating in a large or small organisation and applying skills in the context of enterprise projects.

The project practitioner may be part of a project team under the direction of a project manager, or may work as part of a smaller scale self-directed team.

This unit has generic application to a range of industries and organisations and a range of projects, from simple to complex.

In the context of this unit a project is defined as involving:

- a practical and comprehensive project plan
- a documented communications strategy
- a detailed project budget
- strategic engagement with stakeholders
- a risk, issues and change-management methodology
- a quality plan with assurance and control processes
- a supportive team-based environment.

The functions performed in project work, where formal project management methodology is not the main focus, are covered by BSBPMG522A Undertake project work.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Element	Performance Criteria
Elements describe the essential outcomes of a unit of competency.	*Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.*

Elements and Performance Criteria

1. Contribute to project quality planning	1.1 Contribute to determining ***quality requirements*** of project stakeholders 1.2 Contribute to identifying quantifiable ***quality criteria*** for project deliverables 1.3 Source ***information*** to locate and interpret quality policy and procedures 1.4 Contribute to developing quality requirements in the project plan and processes
2. Apply quality policies and procedures	2.1 Implement ***quality assurance*** in the project according to agreed quality standards and guidelines 2.2 Select and apply ***quality-management tools and methodologies*** to project processes according to organisational policy 2.3 Maintain ***quality control*** records and audit documentation according to agreed procedures 2.4 Determine and maintain compliance records against agreed quality requirements 2.5 Report shortfalls in quality outcomes to ***others*** to enable appropriate action to be initiated
3. Contribute to project continuous improvement process	3.1 Participate in the ongoing review of project outcomes to determine the effectiveness of quality-management activities 3.2 Contribute to stakeholder satisfaction analysis to ensure expectations have be met 3.3 Report quality-management issues and responses to others for application to future projects

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- literacy skills to:
  - work with quality documents and project records
  - produce records for quality control and auditing purposes
- planning and organising skills and attention to detail to monitor compliance with agreed standards
- teamwork and communication skills to:
  - communicate quality issues
  - identify stakeholder satisfaction.

Required knowledge

- quality assurance processes and requirements
- quality control processes and requirements
- quality criteria relevant to the industry context
- quality-management tools and methodologies relevant to the industry and organisation context
- quality standards and their place in the project life cycle.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • applying quality-management and continuous-improvement techniques in a project relevant to the organisation and industry context • applying quality processes and procedures in a project • clarifying quality requirements with stakeholders • identifying external standards, legislation and regulations • maintaining accurate quality records.
Context of and specific resources for assessment	Assessment must ensure access to: • examples of project documentation used for quality-management purposes • project records.
Method of assessment	A range of assessment methods should be used to assess practical skill and knowledge. The following assessment methods are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third-party workplace reports of on-the-job performance by the candidate • oral or written questioning to assess knowledge of strategies for managing project quality and their application to different situations • analysis of responses to case studies and scenarios that present issues and problems in project quality management • review of records documented and maintained • evaluation of documented results of project activities and product performance • evaluation of reports developed about shortfalls in quality outcomes.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Quality requirements may include:	• acceptable tolerances and variation to specifications • explicit and implicit performance expectations • product and service specifications.
Quality criteria may include:	• Australian and international standards • codes of conduct • industry and organisational policies and practices • legislation and regulation requirements.
Information may include:	• designated standard operating procedures and regulations • organisation and project standards • organisational quality-management policy and guidelines as applied to specific requirements of a project • project quality guidelines and instructions.
Quality assurance may include:	• project finalisation process to capture lessons learned and to enable continuous improvement • systematic review of the project-management process to ensure compliance with organisational policy and guidelines.

Quality-management tools and methodologies may include:	• methodologies, including:
	  • continuous improvement process
	  • lean management
	  • Six Sigma
	  • Total Quality Management
	• tools, including:
	  • cause and effect diagram (fishbone, Ishikawa)
	  • control charts
	  • flowcharting
	  • histogram
	  • Pareto chart
	  • root cause analysis
	  • run chart
	  • scatter diagram.

Quality control may include:	• inspections and audits in compliance with guidelines • monitoring conformance to the specification • recommending ways to eliminate causes of unsatisfactory

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	performance of products or processes • regular inspection by the individual or the monitoring of inspections by internal or external agents • reporting variances.
Others may include:	• higher project authority • organisational quality management • project manager • project specialists and other personnel • team members.

Unit Sector(s)

Management and Leadership – Project Management

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BSBPMG415A Apply project risk-management techniques

Modification History

Release	Comments
Release 1	This version first released with *BSB07 Business Services Training Package Version 8.0*. Replaces BSBPMG407A Apply risk management techniques.

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to assist with aspects of risk management in a project. It specifically involves planning for, controlling and reviewing risks associated with the project, and assisting in this process where required.

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Application of the Unit

This unit applies to a project practitioner working in a project support role.

The individual may be operating in a large or small organisation and applying skills in the context of enterprise projects.

The project practitioner may be part of a project team under the direction of a project manager, or may work as part of a smaller scale self-directed team.

This unit has generic application to a range of industries and organisations and a range of projects, from simple to complex.

In the context of this unit a project is defined as involving:

- a practical and comprehensive project plan
- a documented communications strategy
- a detailed project budget
- strategic engagement with stakeholders
- a risk, issues and change-management methodology
- a quality plan with assurance and control processes
- a supportive team-based environment.

The functions performed in project work, where formal project management methodology is not the main focus, are covered by BSBPMG522A Undertake project work.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Element	Performance Criteria
Elements describe the essential outcomes of a unit of competency.	*Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.*

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Elements and Performance Criteria

1. Assist with risk analysis and planning	1.1 Contribute to identifying and prioritising potential risks throughout the project life cycle, using established ***risk-analysis methods***, techniques and tools 1.2 Contribute to developing ***risk-management strategies*** and ***risk-management plans*** according to established guidelines 1.3 Contribute to developing and implementing risk-reporting mechanisms
2. Perform risk-control activities	2.1 ***Monitor risks*** according to agreed project and risk-management plans and advise project manager of changing circumstances 2.2 Regularly review progress and future activity for the purpose of identifying potential and actual risks and opportunities 2.3 Contribute to implementing agreed ***risk-management approaches*** and amending plans to reflect the changing environment 2.4 Contribute to corrective action on risks according to the risk-management plan and ***delegated authority*** 2.5 Contribute to the review of contingency plans on an ongoing basis and, where required, ensure tasks allocated to individuals and/or team are clarified with the project manager before implementation 2.6 Apply and monitor ***risk-contingency measures*** according to the risk-management plan 2.7 Identify and report ***opportunities*** in the same way as risks
3. Contribute to assessing risk-management outcomes	3.1 Contribute to the ongoing review of project outcomes to determine the effectiveness of risk-management activities by accessing project ***risk records*** and other available information 3.2 Report risk-management issues and responses to others for lessons learned or application to future projects

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication and teamwork skills to contribute to collective processes for risk management
- initiative and enterprise skills to think laterally about risks and how they may occur
- planning, organising and analytical skills to assist with risk analysis, risk-management planning and review of risk-management outcomes.

Required knowledge

- risk-management methods and standards
- risk-management processes.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • applying risk-management techniques in relation to workplace projects • knowledge of risk-management methods, techniques and tools.
Context of and specific resources for assessment	Assessment must ensure access to: • examples of project-management documentation for risk management.
Method of assessment	A range of assessment methods should be used to assess practical skill and knowledge. The following assessment methods are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third-party workplace reports of on-the-job performance by the candidate • analysis of responses addressing case studies and scenarios that present issues and problems in project risk management • oral or written questioning to assess knowledge of strategies for managing project risk and their application to different situations • review of risk-analysis methods, techniques and tools • review of risk-management plans • evaluation of reporting of risk-management issues and responses.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Risk-analysis methods may include:	• risk categorisation • risk data quality assessment • risk likelihood and consequence ranking • risk urgency assessment.
Risk-management strategies may include:	• accepting some or all of the consequences of a particular risk • avoiding the risk • mitigating the likelihood of the risk • sharing risk with another party • transferring risk to another party.
Risk-management plans may include:	• definitions of risk likelihood and consequence • identified risks • methodologies • risk categories and priorities • risk context for project • roles and responsibilities in regard to risk management • stakeholder tolerances • tools for determining risk rank and priority • tracking risks.
Monitoring risks may include:	• recommended corrective actions • recommended preventative actions • requested changes • reserve analysis • risk audits • risk reassessment • risk register and updates • status meetings • technical performance information • variance and trend analysis.
Risk-management approaches may include:	• risk identification • risk quantification • risk response control • risk response development.
Delegated authority may	• subject to frequent change in different project contexts

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be:	• under limited guidance and supervision • within agreed authorisation and limits • within established organisational framework, procedures and routines.
Risk-contingency measures may include:	• alternative project plans and approaches • degree of acceptable variation • planning for risk • project planning tolerances.
Opportunities may include:	• better means of achieving a result • changes in the project or broader environment that offer scope for rescheduling activities to better effect • efficiencies or methods to work more effectively, such as ways of shortening an activity • initial project activities that reveal entirely different sets of priorities, for example product development, research and policy development • responses to changing commercial or competitive conditions.
Risk records may include:	• lists of potential risk events • project and/or organisation files and records • risk analysis and reappraisal • risk diaries, risk registers, incident logs, occurrence reports and other such documentation • risk-management lessons learned • risk-management plan.

Unit Sector(s)

Management and Leadership – Project Management

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BSBPMG522A Undertake project work

Modification History

Release	Comments
Release 1	This version first released with *BSB07 Business Services Training Package Version 8.0*. Replaces BSBPMG510A Manage projects.

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to undertake a straightforward project or a section of a larger project. This unit addresses the management of projects, including developing a project plan, administering and monitoring the project, finalising the project, and reviewing the project to identify lessons learned for application to future projects.

Application of the Unit

The unit focuses on the application of project-management skills and the requirement to meet timelines, quality standards, budgetary limits and other requirements set for the project.

The unit does not apply to specialist project managers. For specialist project managers, the other units of competency in the project management field (BSBPMG) will be applicable.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Element	Performance Criteria
Elements describe the essential outcomes of a unit of competency.	*Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.*

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Elements and Performance Criteria

1. Define project	1.1 Access ***project scope and other relevant documentation*** 1.2 Define project stakeholders 1.3 Seek clarification from ***delegating authority*** of issues related to project and ***project parameters*** 1.4 Identify limits of own responsibility and reporting requirements 1.5 Clarify relationship of project to other projects and to the organisation's objectives 1.6 Determine and access available resources to undertake project
2. Develop project plan	2.1 Develop ***project plan*** in line with the project parameters 2.2 Identify and access appropriate ***project-management tools*** 2.3 Formulate risk-management plan for project, including work health and safety (WHS) 2.4 Develop and approve project budget 2.5 Consult team members and take their views into account in planning the project 2.6 Finalise project plan and gain necessary approvals to commence project according to documented plan
3. Administer and monitor project	3.1 Take action to ensure project team members are clear about their responsibilities and the project requirements 3.2 Provide ***support for project team members***, especially with regard to specific needs, to ensure that the quality of the expected outcomes of the project and documented time lines are met 3.3 Establish and maintain ***required record-keeping systems*** throughout the project 3.4 Implement and monitor plans for managing project finances, ***resources*** and quality 3.5 Complete and forward project reports as required to stakeholders 3.6 Undertake ***risk management*** as required to ensure project outcomes are met 3.7 Achieve project deliverables
4. Finalise project	4.1 Complete financial record keeping associated with project and check for accuracy 4.2 Ensure transition of staff involved in project to new roles or reassignment to previous roles

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	4.3 Complete project documentation and obtain ***necessary sign-offs*** for concluding project
5. Review project	5.1 Review project outcomes and processes against the project scope and plan 5.2 Involve team members in the project review 5.3 Document lessons learned from the project and report within the organisation

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication and negotiation skills to work with team members and other stakeholders to maintain project schedules
- communication skills to relate to people with diverse abilities and from diverse backgrounds in a culturally appropriate way
- literacy skills to read, write and review a range of documentation
- numeracy skills to:
  - analyse data
  - compare time lines and promotional costs against budgets
- planning and organising skills to develop, monitor and maintain implementation schedules.

Required knowledge

- organisation's mission, goals, objectives and operations and how the project relates to them
- organisational structure, and lines of authority and communication in the organisation
- relevant legislation and codes from all levels of government that may affect aspects of business operations, including:
  - anti-discrimination legislation
  - codes of practice
  - environmental issues
  - ethical principles
  - WHS
  - privacy laws.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • developing a project plan • examples of monitoring arrangements and evaluation of the efficacy of the project plan in addressing project time lines and budget • knowledge of relevant legislation.
Context of and specific resources for assessment	Assessment must ensure: • access to workplace project documentation • demonstration of all required skills, knowledge and performance in a workplace-based project.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third-party workplace reports of on-the-job performance by the candidate • observation of presentations • oral or written questioning to assess knowledge of the organisation's mission, goals, objectives and operations and how the project relates to them • review of project risk-management plan and project plan • evaluation of project reports forwarded to stakeholders • analysis of documentation reviewing project outcomes and processes against the project scope and plan • evaluation of documentation outlining lessons learned from the project.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other project management units.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Project scope and other relevant documentation may include:	• contract or other agreement
	• project brief
	• project plan or summary
	• other documents outlining:
	  • expected outcomes of the project
	  • inclusions and exclusions from project
	  • project resources
	  • quality standards for project
	  • timeframes for project.

Stakeholders may include:	• clients or customers (internal and external) • funding bodies • management, employees and relevant key personnel (internal and external) with special responsibilities • project sponsor.
Delegating authority may include:	• customer or client • funding body • manager or management representative • project sponsor.
Project parameters may include:	• project finances or budget • integration of project within organisation • legislative and quality standards • physical, human and technical resources available or required for project • procurement requirements associated with project • reporting requirements • risks associated with project, including WHS • scope of project • time lines.
Project plan may include:	• details of how the project will be managed • roles and responsibilities • time lines • work breakdown structure.
Project management	• cost schedule control system

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tools may include:	• Critical Path Method • Gantt and bar charts • life cycle cost analysis • logistics support analysis • PERT charts • project management software • risk and issues logs • spreadsheets • technical resources required for the project, for example WHS management-system tools.
Support for project team members may include:	• additional physical, human and technical resources (within allocated budget) if and as required • encouragement • feedback • learning and development • regular project team meetings • supervision, mentoring and coaching.
Required record-keeping systems may include systems for:	• correspondence • financial data, including costs, expenditure, income generated and purchases • project outcomes • quality data, including any test results • recording of time spent on project and progress in completing project • samples, prototypes and models.
Resources may include:	• human • physical • technical.
Risk management may include:	• changing roles and responsibilities in project team • negotiating an extension of deadline, or redefining completion or quantity or quality of outcomes • outsourcing some aspects of the project • reducing costs • researching and applying more efficient methods for completing project tasks • seeking further resources to meet deadline • sharing ideas to gain improvements to work undertaken in the project.
Necessary sign-offs may be required by:	• clients • funding body • management • project sponsor.

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Unit Sector(s)

Management and Leadership – Project Management

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CHCCOM504A Develop, implement and promote effective workplace communication

Modification History

Not Applicable

Unit Descriptor

Descriptor	This unit describes the knowledge and skills required to apply higher level communication skills that underpin effective workplace operations

Application of the Unit

Application	The high level communication skills described in this unit may be applied across a range of workplace contexts involving development, application and evaluation of communication strategies to effectively address identified client needs and promote the organisation

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Not Applicable

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Employability Skills Information

Employability Skills	This unit contains Employability Skills

Elements and Performance Criteria Pre-Content

Elements define the essential outcomes of a unit of competency.	The Performance Criteria specify the level of performance required to demonstrate achievement of the Element. Terms in italics are elaborated in the Range Statement.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Contribute to the development of effective communication strategies	1.1 Develop, promote, implement and review strategies for internal and external dissemination of information as required to maximise individual and organisation effectiveness
	1.2 In developing and implementing strategies, address special communication needs to avoid discrimination in the workplace
	1.3 Establish channels of communication and review regularly to ensure staff are informed of relevant information in a timely way
	1.4 Provide coaching in effective communication to staff as required
	1.5 Use negotiation and conflict resolution strategies where required to promote effective operation of the organisation
	1.6 Negotiate issues with key stakeholders, *clients* and staff to facilitate mutually acceptable outcomes
	1.7 Maintain relevant work-related networks and relationships to meet client needs and organisation objectives
	1.8 Ensure all communication with clients and colleagues is appropriate to individual needs and the situation and promotes achievement of organisation objectives

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ELEMENT	PERFORMANCE CRITERIA
2. Represent the organisation to a range of groups	2.1 Present relevant, appropriately researched material in internal and external forums, in a manner that promotes the organisation and is adjusted as required to meet *audience needs* 2.2 Ensure presentations are clear and sequential and delivered within a predetermined time, and utilise appropriate media to enhance the presentation and address audience needs 2.3 Respond to questions from the audience in a manner consistent with organisation standards 2.4 Respect and consider differences in views in a way that values and encourages contributions of others
3. Facilitate group discussions	3.1 Define and implement mechanisms that enhance effective group interactions 3.2 Routinely use strategies that encourage all group members to participate, including seeking and acknowledging contributions from all members 3.3 Routinely set and follow objectives and agendas for meetings and discussions 3.4 Provide relevant information to groups as appropriate to facilitate outcomes 3.5 Evaluate group communication strategies to promote ongoing participation of all parties 3.6 Identify and address the specific communication needs of individuals
4. Facilitate work group interaction	4.1 When conducting meetings, clarify purpose, agree procedures, negotiate roles and responsibilities, adhere to agreed timeframes and maintain equality of participation and input by group members 4.2 Seek feedback on operation of group processes, encourage suggestions for change and implement appropriate action 4.3 Provide feedback in a supportive manner appropriate to individuals and the group

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ELEMENT	PERFORMANCE CRITERIA
5. Use specific communication techniques to assist in resolving conflict	5.1 Use strategies to facilitate conflict resolution 5.2 Use communication skills and processes to identify and address barriers to communication and explore issues and background to the conflict 5.3 Use effective skills in listening, reframing providing feedback and negotiation to support exploration and clarification of issues 5.4 Seek agreement on processes to be followed to resolve conflict within scope of own abilities, skills and work role 5.5 Make referral for conflict resolution and mediation as appropriate
6. Produce quality written materials	6.1 Ensure writing is succinct and clear and presented in a logical and sequential way to match audience needs and the purpose of the document 6.2 Ensure all written documentation produced addresses organisation guidelines and current accepted standards of writing in line with purpose 6.3 Prepare and provide appropriate and timely advice to management and clients as required 6.4 Where individual skill levels do not match workplace requirements, take appropriate remedial action, including seeking assistance and additional training

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ELEMENT	PERFORMANCE CRITERIA
7. Conduct interviews	7.1 In conducting interviews and formal discussions, make an effort to ensure that appropriate structures, timeframes and protocols are mutually agreed and adhered to
	7.2 Use effective questioning, speaking, listening and non-verbal communication techniques during discussions and interviews, to ensure the required information is accessed or message communicated
	7.3 Give feedback and advice in a way which reflects current identified good practice
	7.4 Conduct interviews and formal discussions with due regard to individual differences, needs and rights
	7.5 Use appropriate complaints management, grievance and counselling procedures to deal with serious problems

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level required for this unit.

Essential knowledge:

The candidate must be able to demonstrate essential knowledge required to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the identified work role

These include knowledge of:

- Knowledge of different communication styles and techniques
- Different interview techniques
- Effective interpersonal, written and oral communication
- Negotiation techniques
- Group development processes
- Conflict resolution strategies and techniques
- Research techniques, including for social research

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REQUIRED SKILLS AND KNOWLEDGE

Essential skills:

It is critical that the candidate demonstrate the ability to:

- Establish and maintain an appropriate network of clients
- Incorporate the requirements of specific groups in all client service work
- Communicate professionally with other professionals

In addition, the candidate must be able to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the identified work role

These include the ability to:

- Work effectively with clients and service providers
- Assess cultural communication protocols
- Demonstrate application of skills in:
  - Self-reflection
  - Principles and practices of client service delivery
  - Effective workplace writing
  - Effective presentation techniques
  - Effective communication techniques
  - Effective interviewing
  - Effective group management processes
  - Conflict resolution and negotiation
- Use relevant information technology effectively in line with occupational health and safety (OHS) guidelines

Evidence Guide

EVIDENCE GUIDE

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EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate this unit of competency:

- The individual being assessed must provide evidence of specified essential knowledge as well as skills
- This unit will be most appropriately assessed in the workplace or in a simulated workplace and under the normal range of workplace conditions
- Assessment is recommended to be conducted over more than one occasion and include communications with individuals and groups

Access and equity considerations:

- All workers in community services should be aware of access, equity and human rights issues in relation to their own area of work
- All workers should develop their ability to work in a culturally diverse environment
- In recognition of particular issues facing Aboriginal and Torres Strait Islander communities, workers should be aware of cultural, historical and current issues impacting on Aboriginal and Torres Strait Islander people
- Assessors and trainers must take into account relevant access and equity issues, in particular relating to factors impacting on Aboriginal and/or Torres Strait Islander clients and communities

Context of and specific resources for assessment:

- This unit can be assessed independently, however holistic assessment practice with other community services units of competency is encouraged
- Resources required for assessment include access to relevant workplace or simulated realistic workplace setting where assessment may take place

Method of assessment:

- Assessment may include observations, questioning or evidence gathered from the workplace, including testimonials from clients and colleagues etc

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Range Statement

RANGE STATEMENT

The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.

Oral, written and non-verbal communication in the organisation can occur with:

- Clients and stakeholders
- Representatives of client groups or organisations
- Members of the public
- Managers and staff in own and other organisations
- Private organisations and consultants
- Academic institutions, public sector and community organisations
- Colleagues in different locations e.g. regional/central offices

Audience needs may require adjustments, such as:

- Alternative format for written materials such as large print, braille, audio or in another language
- Assistive technology such as audio loops
- Interpreters including signers

Written communication can involve both handwriting and operation of word processing equipment
It may take the form of:

- Case notes and reports
- Minutes of meetings
- Routine as well as complex reports
- Proposals, project plans and spreadsheets
- General internal and external correspondence
- Speeches, journal articles and marketing materials
- Instructions, procedures and policies
- Submission writing

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RANGE STATEMENT

Oral communication can take the form of:	• Seeking and conveying information • Consulting and advising • Formal and informal presentations to different audiences • Structured interviewing for selection or counselling purposes • Leading discussions and briefings • Negotiating • Chairing and participating in meetings • Conflict resolution • Coaching • Advocacy • On the job training
Clients are defined by the work of the organisation and can include:	• Individual members of the public • Other organisations, community groups and individuals • Other work areas of the organisation

Unit Sector(s)

Not Applicable

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CPCCBC4001A Apply building codes and standards to the construction process for low rise building projects

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to access, interpret and apply relevant building codes and standards applicable to the construction processes of residential and low rise commercial buildings (low rise' licensing classification with reference to Class 1 and 10 construction and Classes 2 to 9 with a gross floor area not exceeding 2000 square metres, not including Type A or Type B construction).

To successfully construct low rise buildings requires a thorough knowledge of the purpose and content of the Building Code of Australia (BCA), coupled with the ability to interpret other codes and standards related to a specific building.

Application of the Unit

Application of the unit

This unit of competency supports builders, site managers and related construction industry professionals responsible for ensuring compliance with building codes and standards in the residential and commercial construction industry.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Access and interpret relevant code and standard requirements.	1.1. Relevant performance requirements from the BCA that apply to individual projects (described as ***low rise***) are identified. 1.2. Requirements of relevant BCA deemed-to-satisfy (DTS) provisions are determined. 1.3. Requirements of relevant Australian standards referenced in the BCA are accessed and interpreted accordingly.
2. Classify buildings.	2.1. Nature of a building is determined according to its use and arrangement. 2.2. BCA criteria to determine the defined classification are applied. 2.3. BCA requirements for multiple classification are identified and interpreted.
3. Analyse and apply a range of solutions to a construction problem for compliance with the BCA.	3.1. Range of criteria that will ensure that construction methods comply with BCA performance requirements is determined. 3.2. Alternative solutions to a design or construction problem that will comply with BCA requirements are discussed and proposed in accordance with company policies and procedures. 3.3. Performance-based solutions are identified and documented in accordance with BCA requirements. 3.4. ***Assessment methods*** referenced in the BCA to determine whether a building solution complies with ***performance requirements*** or DTS provision of the BCA are analysed and applied. 3.5. Relevant documentation is identified and completed in accordance with BCA requirements.
4. Apply fire protection requirements.	4.1. Passive and active fire control elements for low rise building required by the BCA and other legislation are identified and applied. 4.2. Level of fire resistance required for the construction of various low rise buildings is determined. 4.3. Check of existing buildings for compliance with passive and active fire protection requirements is carried out in accordance with BCA requirements.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- analysis and interpretation skills relating to documentation from a wide range of sources, including BCA and referenced documents
- application of design concepts and principles in accordance with BCA, namely:
  - Class 1 and 10
  - Classes 2 to 9 with a gross floor area not exceeding 2000 square metres, not including Type A or Type B construction
- attention to detail in applying building codes and standards
- communication skills to:
  - discuss and propose alternative solutions
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret:
    - documentation from a variety of sources, including BCA and referenced documents
    - drawings and specifications
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
  - written skills to complete documentation in accordance with BCA requirements
- numeracy skills to interpret and apply mathematical information included in building codes and standards.

Required knowledge

Required knowledge for this unit is:

- basic design principles and the behaviour of structures under stress, strain, compression, bending or combined actions
- BCA performance hierarchy
- definitions and common technical terms or usage specified under general provisions of BCA
- general nature of materials and the effects of performance
- relevant Australian standards
- relevant legislative and OHS requirements, codes and practices
- types of working drawings and specifications
- understanding of the BCA relating to:
  - Class 1 and 10

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REQUIRED SKILLS AND KNOWLEDGE

- Classes 2 to 9 with a gross floor area not exceeding 2000 square metres, not including Type A or Type B construction.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed by the application of design principles and solutions specified in BCA performance requirements or DTS provisions applicable to a building project. This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with organisational quality procedures and processes • apply and interpret relevant documentation and codes • accurately apply BCA performance requirements relating to the design and construction of a building • understand assessment methods available to determine compliance with the BCA • identify faults and problems and proposed action to rectify.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • access to BCA and relevant documents referenced in the BCA

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EVIDENCE GUIDE

- access to relevant legislation
- project documentation, including design brief, design drawings, specifications, construction schedules and other supporting documents
- research resources, including product information and data
- relevant computer software package and suitable hardware.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

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EVIDENCE GUIDE

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Low rise is described as falling within the BCA classes:

- Class 1 and 10
- Classes 2 to 9 with a gross floor area not exceeding 2000 square metres, not including Type A or Type B construction.

Assessment methods include:

- comparison with BCA DTS provisions
- evidence of suitability as described in the BCA
- expert judgement as defined in the BCA
- verification method as defined in the BCA.

Performance requirements include:

- performance requirements contained within other legislation applicable to a specific project
- performance requirements of the BCA determined to be relevant to a specific project
- performance-based contractual requirements that must be fulfilled by any party.

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Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4002A Manage occupational health and safety in the building and construction workplace

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to conduct an OHS risk analysis, including the inspection of workplaces for hazards. The development and implementation of appropriate responses, including responses required by state or territory legislation and regulations, to mitigate the risks are also addressed.

The unit requires candidates to have a comprehensive and appropriate understanding of the complex range of legislative and workplace requirements to manage risk in building and construction workplaces.

Application of the Unit

Application of the unit

This unit of competency supports the needs of builders, site managers and forepersons in the building and construction industry.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine areas of potential risk in the building and construction workplace.	1.1. ***Specific risks*** for the range of occupations in the workplace are identified and prioritised. 1.2. Construction site safety is evaluated and construction hazards and potential risk areas are identified in accordance with ***legislative requirements*** for OHS and company policies. 1.3. Hazards are identified and prioritised and required approaches to remediation are documented.
2. Inspect and report on areas of specific risk.	2.1. Inspection of the workplace is conducted to identify specific risks for the range of identified occupations. 2.2. Expert advice, including advice from workplace personnel, is sought as appropriate. 2.3. ***Inspection report*** is completed in accordance with best practice and statutory obligations.
3. Advise on implementation of control measures at the building and construction workplace.	3.1. Recommendations are made from findings of inspection report. 3.2. ***Relevant parties*** are consulted regarding compliance issues relating to statutory requirements. 3.3. Agreed control measures are implemented in conjunction with relevant ***workplace personnel***. 3.4. Effectiveness of control measures are monitored and reviewed.
4. Establish and review communications and educational programs.	4.1. Effective strategies for communicating OHS policy and practice are determined in consultation with appropriate personnel. 4.2. ***Communication strategies*** and ***educational programs*** specific to the building and construction industry and in accordance with statutory requirements and best practice are established. 4.3. Effectiveness of the communication and educational programs is reviewed.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

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REQUIRED SKILLS AND KNOWLEDGE

Required skills

Required skills for this unit are:

- application of regulatory requirements, including safe work method statements and plans such as site safety plans
- appropriate literacy and numeracy skills
- attention to detail in applying building codes and standards
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - seek expert advice and consult with relevant parties and workplace personnel on a variety of issues
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
  - written communication skills to complete inspection reports and maintain records
- conducting OHS legislation and documentation research
- construction site inspection techniques for OHS compliance
- interpretation and application of construction documentation
- interviewing skills
- knowledge of the technical and trade skills in building and construction processes
- maintaining records and documents
- negotiation and conflict resolution skills
- OHS auditing skills
- OHS compliance investigation skills.

Required knowledge

Required knowledge for this unit is:

- building and construction industry contracts
- current workplace and OHS legislation and advisory standards applicable to each State and Territory, such as:
  - Asbestos Advisory Standards
  - Concrete Pumping Supplement
  - Construction Workplace Advisory Standard
  - Demolition Advisory Standard
  - Excavation Advisory Standard
  - Falling Objects Advisory Standard
  - Falls from Heights Advisory Standard
  - Formwork Advisory Standard

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REQUIRED SKILLS AND KNOWLEDGE

- Manual Handling in the Building Industry Advisory Standard
- Noise Advisory Standard
- Plant Advisory Standard
- Scaffolding Advisory Standard
- Steel Construction Advisory Standard
- Work on Roofs Advisory Standard
- other relevant state or territory building and construction codes, standards and government regulations.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed by conducting an OHS inspection and developing an OHS risk analysis for a building project. This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with organisational quality procedures and processes • apply and interpret relevant documentation and codes • accurately apply national and State and Territory OHS requirements relating to construction workplace • identify faults and problems impacting on OHS and proposed action to rectify.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • current copy of relevant state OHS legislation, regulation and advisory standard for first aid • samples of workplace incident data and incident reports • other relevant codes, standards and

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EVIDENCE GUIDE

	government regulations • office equipment, including calculators, photocopiers and telephone systems • computers with appropriate software. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge • all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

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EVIDENCE GUIDE

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Specific risks for various occupations within the building and construction industry relate to:

- commonly used construction equipment, including:
  - concrete mixers
  - manually operated power tools
  - handheld tools
  - wheelbarrows
  - mechanical trowels
- commonly used high risk construction equipment, including:
  - lasers
  - explosive powered tools
  - compressed air nailing tools
  - ladders
  - high pressure jetting systems
  - material conveyors
- cranes, hoists and lifting gear
- demolition, including:
  - abrasive blasting

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RANGE STATEMENT

	• asbestos removal • civil construction work, including excavation and trenching work • Class 1 electrical work • concrete pumping • environmental conditions • exposure to ultraviolet light (UVL) • masonry and concrete cutting • pre-cast concrete product installation • pre-stressing and post-tensioning operations • protruding objects • spray painting • stacking and storing materials • steel construction • steel fixing • working at heights • working on roofs • fall protection and access equipment • falling objects • falls from height • formwork • pressure equipment • scaffolding • welding, cutting and gouging processes in the construction industry in particular, oxy-acetylene.
Legislative requirements for OHS may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation • environmental requirements to cover water quality management • may include waste management, stormwater protection and clean-up protection • handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as disability are a factor • legislative requirements to be adhered to in all planning and implementation stages, which may require the development and use of site

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RANGE STATEMENT

	safety plans and safe work methods statements hazard control
	• hazardous materials and substances
	• organisational first aid
	• personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • machines
	  • surrounding structures and facilities
	  • traffic control
	  • underground services
	  • working in confined spaces
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Inspection report may include:	• checklists • company safety procedure forms • hazard sheets • prescribed self assessment tools identified by a relevant state or territory authority (relevant legislation must be applied).
Relevant parties include:	• designers • employers • manufacturers and importers • members of site safety committees • persons in control of workplaces • principal contractors • self-employed persons and subcontractors • suppliers of plant • workers.
Workplace personnel include:	• employers

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RANGE STATEMENT

	• members of site safety committees • persons in control of workplaces • principal contractors • self-employed persons and subcontractors • workers.
Communication strategies include:	• issued site specific instructions and signage • verbal communications • written communications, including memos and emails.
Educational programs include:	• general and site-specific induction training, noting that OHS induction training provided must meet the requirements of the jurisdiction in which the construction work is undertaken • other forms of specialist and targeted training.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4003A Select and prepare a construction contract

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to select and prepare appropriate construction contracts, including the sections, clauses and conditions for low rise construction projects. The ability to interpret complex documents, communicate clearly and succinctly and negotiate is essential skills.

Application of the Unit

Application of the unit

This unit of competency supports the needs of builders, project managers, estimators and managers in the building and construction industry responsible for selecting and preparing contracts for building work.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and analyse the essential elements, sections and clauses of a business contract.	1.1. Various types of ***building and construction contracts*** are identified and the appropriate application of each type is analysed. 1.2. Essential terms and elements of a valid contract are identified and analysed. 1.3. Importance of identifying an intention to create legal relations is analysed. 1.4. Rights and liabilities of parties under a contract are identified and analysed. 1.5. Common building contract terms and procedures are identified and applied. 1.6. Circumstances that bring about a breach of contract are identified and analysed. 1.7. Legislative requirements are identified and applied.
2. Select an appropriate contract for the works to be undertaken.	2.1. A contract, appropriate for the type of construction, is accurately selected. 2.2. ***Range of documents*** that collectively make up a contract is accurately identified and prepared. 2.3. Requirements associated with an offer and acceptance of a contract are accurately identified and applied. 2.4. Capacity of the parties to form a binding agreement in the form of a contract is confirmed. 2.5. Factors associated with the parties' consent to a contract are identified and applied.
3. Prepare the contract.	3.1. Expert advice is sought as required in the preparation of the contract. 3.2. Factors leading to the ***termination of a contract*** are defined, analysed and assessed during the preparation of the contract. 3.3. Contract rise and fall amounts are accurately calculated during the preparation of the contract. 3.4. Schedule of progress payments is assessed and included in the preparation of the contract. 3.5. Processes for applying for extensions of time are included in the preparation of the contract. 3.6. Final contract is prepared in consultation with relevant personnel and in accordance with the accepted processes of the organisation and legal requirements.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - facilitate effective communication by phone, facsimile, email or in writing, with members of the organisation and external parties, including clients and subcontractors
  - facilitate drafting detailed responses to queries relating to the finer points of contracts
  - read and interpret:
    - complex legal text
    - construction schedules
    - contracts
    - reports
    - specifications
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
  - written skills to prepare a construction contract, including completing memos, schedules and evaluative reports and communicating complex ideas and alternatives
- contractual arrangement problem solving
- negotiation with construction clients
- numeracy skills to apply calculations, including rise and fall amounts applicable to changed contract circumstances.

Required knowledge

Required knowledge for this unit is:

- definitions and interpretations commonly applied to contracts
- legal meanings of terms and clauses in building and construction contracts
- relationships between the organisation and its clients
- various contract types and the circumstances they cover.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by the selection and development of appropriate contracts, which meet organisational and industry standards and relate to low rise building structures.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is demonstrated in the relevant aspects of contract selection and insertion of appropriate clauses, including rise and fall and progress payments.

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- select the right contract for the particular project
- select appropriate clauses and conditions within the contract
- identify causes of a breach of contract
- specify requirements for the offer and acceptance of a contract
- specify requirements for the termination of a contract
- accurately calculate rise and fall amounts
- specify schedule for progress payments
- specify requirements for extensions of time
- include all related documentation
- refer to all relevant legislation.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge

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will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- documentation that should normally be available in either a building or construction office
- relevant codes, standards and government regulations
- office equipment, including calculators, photocopiers and telephone systems
- computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies
- a technical reference library with current publications on measurement, design, building construction and manufacturer's product literature
- a suitable work area appropriate to the construction process.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

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- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Building and construction contracts relevant to the sector and organisational needs may include:

- Australian standard contracts (including the AS2124 and AS4000 series)
- Construction Industry Contract (CIC) suite
- contracts required or supplied by regulatory

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RANGE STATEMENT

	authorities or state or territory legislation • individual organisational contracts • Joint Contracts Committee (JCC) suite • Master Builders Association (MBA) and Housing Industry Association (HIA) or other standard industry contracts • Simple Building Works (SBW), including series 1 and series 2 (SBW2 Lump Sum).
Range of documents includes:	• equipment, site accommodation and services information • human resource projections • materials lists • plans, drawings and specifications • project timelines • schedules.
Termination of a contract includes definitions and applications of:	• abandonment of a contract • conditions for completion at the cost of the contractor • effect of ousting the contractor from the building or construction • relevant legislation and contract provisions • repudiation of a contract by one party and its agreed definition • unreasonable or vexatious notice.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

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Functional area

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CPCCBC4004A Identify and produce estimated costs for building and construction projects

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to establish the estimated costs associated with the acquisition of materials and labour on building and construction sites, together with the application of relevant overhead costs and margins. Knowledge of physical resource and supplier identification, assessment of the availability of and requirements for skilled labour and application of appropriate codes, regulations and approvals gaining processes is essential.

Application of the Unit

Application of the unit

This unit of competency supports the needs of estimators, builders, managers and trade contractors within the construction industry responsible for producing estimated costs for labour, materials, overheads and on-costs on various residential and commercial construction projects within their scope of work as a trade contractor or builder.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Read and interpret plans and specifications.	1.1. Appropriate plans and drawings are correctly identified. 1.2. Project ***plans and specifications*** are read and understood. 1.3. Levels, heights, gradients and other measurements are interpreted. 1.4. Measurements are made and quantities identified from plans and specifications that conform to standard industry practice.
2. Identify and calculate labour costs.	2.1. Types and numbers of appropriate on-site personnel are identified and the time required on site is estimated. 2.2. Labour hours for non-contract elements of on-site work are calculated. 2.3. Costs or rates for required on-site work are calculated.
3. Identify and establish physical resource requirements.	3.1. Physical resource requirements are identified. 3.2. Lists of materials are produced and quantities calculated. 3.3. Quantities are established against project or standard construction contracts. 3.4. Supplier prices for materials and consumables are obtained. 3.5. Plant or equipment requirements are identified and costed.
4. Develop estimated project costs.	4.1. Appropriate labour rates and material costs are selected and applied. 4.2. Estimates of ***unit costs*** are determined and applied as appropriate. 4.3. Costs to the project of WorkCover, Environmental Protection Agency (EPA) requirements, seeking approvals, waste management site fees and other statutory or additional costs are identified and applied. 4.4. Company overhead recovery and margins are applied. 4.5. Completed estimated ***project costs*** are calculated for inclusion in a tender or bill.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret drawings and specifications
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
- contractual arrangement problem solving
- estimate labour and materials costs from written information
- numeracy skills to calculate labour hours and costs, material quantities and costs
- use appropriate costing software programs.

Required knowledge

Required knowledge for this unit is:

- how to access and interpret:
  - national codes, including Building Code of Australia (BCA) and the Plumbing Code of Australia
  - Australian standards relevant to the industry sector
- includes state or territory and local government building and construction codes, standards and government regulations relevant to the form of building or construction being undertaken (e.g. WorkCover and EPA)
- types of building and construction drawings and specifications
- types, scope and usage of labour through the employee and subcontractor systems
- operation and structure of the organisation's costing and contracting system.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed by the preparation of a detailed estimate of labour, materials and other project costs as part of the preparation of a tender or bill for a residential or commercial construction project relevant to the specific trade or sector. This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • identify materials required for a project • gather information about material supply • interpret measurements and calculate quantities and costs • plan and allocate human resources • identify and cost other related costs, such as those required to meet statutory and planning approval processes • produce documentation that meets the timeframes and quality standards established by the organisation • communicate effectively, both verbally and in writing.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements.

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EVIDENCE GUIDE

Resource implications for assessment include:

- documentation that should normally be available in either a building or construction office
- relevant codes, standards and government regulations
- office equipment, including calculators, photocopiers and telephone systems
- computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies
- a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature
- a suitable work area appropriate to the construction process.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace

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EVIDENCE GUIDE

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Plans and specifications include:

- building codes
- materials lists and quantity schedules
- materials specifications
- sketches or drawings
- statements of requirements.

Plant or equipment requirements include:

- communications equipment
- conveyors

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RANGE STATEMENT

	• heavy equipment, such as wheeled and tracked earthmoving equipment, trucks and articulated vehicles
	• hoists
	• mobile and tower cranes
	• on-site equipment, such as:
	  • compressors
	  • pumps
	  • generators
	  • portable lighting
	  • lifting equipment
	  • portable compaction equipment.

Unit costs may include the cost of:	• construction cost per square metre • installation of pipes per metre • installation of sanitary ware per unit • laying of foundation per metre • laying of slabs per square metre • laying of steel tray roofing per square metre • masonry walls per square metre • painting per square metre • tiling per square metre.

Project costs include:	• building or construction materials
	• communications costs
	• cost of meeting statutory requirements, e.g. EPA
	• fuels, lubricants and consumables
	• organisational and subcontract labour hours
	• overheads
	• project administration costs
	• site facilities, such as:
	  • offices
	  • toilets
	  • lunch rooms
	• waste removal fees.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4005A Produce labour and material schedules for ordering

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to produce schedules of resource requirements so that orders can be placed for materials and labour for residential and commercial projects and to record and track costs as they are incurred. Knowledge of codes, regulations and approval processes, contractor systems, physical resource and supplier identification and the ability to assess the availability of and requirements for skilled labour are essential.

Application of the Unit

Application of the unit

This unit of competency supports the needs of site managers and forepersons, estimators, project managers and builders in the construction industry with a responsibility for producing schedules for ordering materials and labour.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and apply all contract conditions to the schedules.	1.1. All contractual requirements are included in the schedules. 1.2. ***Local government and regulatory bodies*** ' conditions of approval are included in the schedules. 1.3. Schedules include colour selections. 1.4. Variations to contracts, raised by the client or the builder, are included in the schedules.
2. Produce material and labour schedules, overlays and orders.	2.1. Nominated suppliers and contractors are detailed in work schedules. 2.2. Relevant overlay drawings are produced. 2.3. Orders include contract details and instructions. 2.4. Contract rates are applied to material and labour schedules.
3. Prepare site files.	3.1. All necessary site documents are included, including approved ***plans and specifications***. 3.2. Call forward sheets are prepared detailing all orders.
4. Monitor and report on project costs.	4.1. ***Project costs*** are analysed against estimates during construction. 4.2. Approved variation costs are analysed. 4.3. Final project cost analysis is provided.
5. Maintain data files of standard costs.	5.1. Approved variation cost increases are incorporated into site files. 5.2. Changes to standard plans, specifications and cost files are included in site files.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand

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REQUIRED SKILLS AND KNOWLEDGE

- communicate information effectively within the organisation and to external agencies and the client
- read and interpret:
  - contracts
  - drawings and specifications
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication
- written skills to:
  - prepare and maintain site files
  - produce schedules and orders
- identify and analyse relevant information
- numeracy skills to apply calculations.

Required knowledge

Required knowledge for this unit is:

- operation and structure of the organisation's costing and contracting system
- state or territory building and construction codes, standards and regulations relevant to the form of building or construction being undertaken
- types of building or construction drawings and specifications commonly used in the industry
- types, scope and usage of labour through the employee and contractor systems.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by the preparation of schedules for materials and labour for a building project.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- identify materials required for the project and gather supply information effectively
- plan and allocate human and physical resources
- produce documentation that meets the timeframes and quality standards established by the organisation
- communicate information effectively within the organisation and to external agencies and the client, as required.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- documentation that should normally be available in a building or construction office
- relevant codes, standards and regulations
- office equipment, including calculators,

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	photocopiers and telephone systems • computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies • a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature • a suitable work area appropriate to the construction process. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability

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and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Local government and regulatory bodies include:
- electricity regulatory authorities
- environmental authorities
- health departments
- shire or municipal councils
- water corporations.

Plans and specifications include:
- building codes
- colour selections
- contract requirements
- material and labour schedules
- materials specifications
- plans, sketches and drawings
- statements of requirements.

Project costs include:
- building or construction materials
- communications costs

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RANGE STATEMENT

- fuels, lubricants and other consumables
- organisational and subcontract labour costs
- overheads
- professional indemnity and other insurance costs
- project administration costs
- site facilities, such as toilets and storage sheds.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4006B Select, procure and store construction materials for low rise projects

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to supervise the systems through which materials are typically selected, acquired and stored on site for projects described by the Building Code of Australia (BCA) as low rise building or construction work (low rise' licensing classification with reference to Class 1 and 10 construction and Class 2 to 9 with a gross floor area not exceeding 2000 square metres, not including Type A or Type B construction).

It ensures the delivery to the site of materials that meet contract specifications and service requirements for low rise projects.

Application of the Unit

Application of the unit

This unit of competency supports builders, related construction industry professionals and managers within building and construction firms responsible for supervising and applying quality standards to the selection of construction materials. To achieve the outcomes for this unit, knowledge of relevant building construction materials and technologies, environmental effects on materials and evaluation procedures is required.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and evaluate the properties of building materials.	1.1. Suitability of ***materials*** commonly used in the region for ***low rise buildings*** is identified for a given building system. 1.2. Properties of materials, their quality and the compatibility and non-compatibility of different materials are ***identified***. 1.3. Environmental impacts of different materials are identified. 1.4. Impact of allowable tolerances on the conversion of naturally occurring materials is identified. 1.5. Tolerances for installing and assembling materials are identified and checked in regard to the nature of the work being performed and the requirements of relevant construction industry Australian standards.
2. Ensure suitable building materials are selected for application.	2.1. Materials that are structurally adequate and appropriate for the building system specified in the contract are ***selected***. 2.2. Materials are selected for their safety; required fire resistance rating; suitability to the application, durability, serviceability and cost effectiveness; and compliance with Australian standards. 2.3. Short and long-term degradation of materials are considered in relation to the building's proposed life cycle. 2.4. Alternative materials are evaluated and selected if specified materials are unavailable or unsuitable. 2.5. Selection of materials for use is finalised in accordance with contractual requirements and in consultation with relevant professionals and the client.
3. Supervise the acceptance, safe handling and storage of materials on site.	3.1. Limitations and effects of transportation on materials and components are determined and action is taken in the case of potentially damaging circumstances. 3.2. ***Materials are handled correctly and safely*** on site using appropriate equipment and safe work practices. 3.3. Materials are stored in accordance with manufacturer specifications and in compliance with relevant Australian standards. 3.4. Processes are implemented for inspecting all materials delivered on site for naturally occurring and/or manufactured defects before installation.

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ELEMENT	PERFORMANCE CRITERIA
	3.5. Personnel are aware of actions to be taken in the case of defects caused by incorrect installation, application or placement.
	3.6. Timber is preserved and ferrous and non-ferrous metals used in the construction process are protected, using established methods.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- analysis and report preparation
- application of safe work practices and materials handling
- apply numeracy skills to workplace requirements
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - communicate with manufacturers and suppliers of materials
  - provide advice and information to regulatory authorities
  - read and interpret:
    - contracts
    - drawings and specifications
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
- development and management of standardised processes
- supervision of small teams.

Required knowledge

Required knowledge for this unit is:

- alternative materials that can be specified in construction projects
- building and construction materials and technologies
- Building Code of Australia (Class 1 and 10 and Class 2 to 9 with a gross floor area not exceeding 2000 square metres, but not including Type A or Type B construction)

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REQUIRED SKILLS AND KNOWLEDGE

- construction supply processes
- construction and contracting equipment and its use
- environmental effects on various building and construction materials
- relevant state or territory building and construction codes, standards and regulations
- testing procedures for construction materials
- workplace safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by the effective supervision and application of quality standards to the identification, selection and storage of the range of relevant construction materials in the range statement.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- identify suitable building and construction materials specified by the project or contract
- use effective verbal and written communication with manufacturers and suppliers of materials
- effectively and efficiently test materials to maintain quality standards on site
- maintain effective sampling and record-keeping processes
- safely handle and store materials
- comply with organisational and legislative requirements.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- documentation that should normally be

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	available in either a building or construction office • relevant codes, standards and regulations • office equipment, including calculators, photocopiers and telephone systems • computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies • a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature • a suitable work area appropriate to the construction process. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances

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assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Materials commonly used in low rise buildings include:

- cements
- ceramics
- concrete
- engineered timber products
- flooring
- framing
- glass
- masonry units
- mortars
- paints and coatings

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RANGE STATEMENT

	• plasterboard • plasterglass • roofing • structural steel.
Low rise buildings are described within the BCA as:	• Class 1 and 10 • Class 2 to 9 with a gross floor area not exceeding 2000 square metres, not including Type A or Type B construction.
Material suitability is ***identified*** by a range of processes, including:	• analysing reports, manufacturer specifications or other reference material regarding the suitability of new and environmentally efficient and sustainable building material technologies with reference to the BCA requirements • arranging industry standard, external quality tests or inspections and provision of results as necessary • arranging relevant, industry standard, on-site quality tests for products to be used in low rise buildings • referencing external reports and manufacturer specifications • refusing to accept substandard or out of specification materials • seeking expert appraisal from relevant industry professionals, including architects, designers and engineers.
Selected includes:	• arranging for expert advice as necessary to confirm or refute material options • identifying materials from specifications and drawings • identifying specifications and standards described in contract documents • selecting and ordering materials that meet those requirements.
Materials are handled correctly and safely by:	• allocation of space for on-site storage of materials • confirming products or materials are as ordered and signing off delivery documentation • ensuring safe unloading and handling of construction materials • ensuring safe use of hazardous materials and

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RANGE STATEMENT

	complying with statutory or regulatory requirements • ensuring correct materials are delivered to correct site • providing adequate on-site security of materials • undertaking quality checks within the competence of the individual.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4007A Plan building or construction work

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to plan on-site activities, including the employment of physical and human resources and the development of documentation and advice for relevant authorities concerning residential and commercial projects.

The ability to identify appropriate resources and suppliers, and assess the availability of and requirements for skilled labour are essential.

Application of the Unit

Application of the unit

This unit of competency supports the needs of builders, site managers, forepersons and other professionals in the construction industry who have a responsibility to plan on-site construction work.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Appraise contract documentation to identify operational requirements.	1.1. ***Contract documentation*** is reviewed to identify any unusual aspects of construction, use of materials or penalties. 1.2. Availability of selected subcontractors to suit the job requirements is determined. 1.3. Availability of materials is assessed and confirmed with suppliers. 1.4. Site access requirements and limitations are identified and actions taken to facilitate entry. 1.5. ***Documentation*** for authorities controlling construction work is prepared and project commencement date is determined. 1.6. Procedures for controlling and recording site deliveries are implemented.
2. Implement strategies for construction operations.	2.1. ***Organisational strategies*** for implementing construction operations are identified. 2.2. Procedures for recording the hire of plant and equipment are implemented. 2.3. Organisational OHS policy and procedures, including hazard and risk management, are implemented. 2.4. Procedures for the removal of existing services and hazardous materials are implemented in accordance with Environment Protection Agency requirements. 2.5. Procedures for the control of multiple projects are followed.
3. Prepare project schedule.	3.1. Construction operations are sequenced. 3.2. Operations details are entered into a manually prepared ***project schedule*** or computer-based software package. 3.3. Critical path of the project is defined and revised as required. 3.4. Project timeframes are adjusted to account for anticipated delays.
4. Determine required resources.	4.1. Temporary services and site accommodation requirements are determined and documented. 4.2. Plant requirements and availability dates are determined and documented with reference to contract documentation. 4.3. On-site labour requirements are determined and

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ELEMENT	PERFORMANCE CRITERIA
	documented with reference to contract documentation.
5. Prepare and submit condition reports.	5.1. Reports on the condition of existing buildings and structures on adjacent site boundaries are completed. 5.2. Copies of condition reports are forwarded to the owners of adjacent buildings prior to commencing construction.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - communicate by telephone, facsimile, email and in writing
  - identify availability of subcontractors
  - liaise with suppliers
  - read and interpret:
    - contract documentation
    - organisational policies
    - other relevant workplace documentation
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
  - written skills to:
    - document required resources
    - prepare documentation for authorities
    - prepare reports
    - record site deliveries
- numeracy skills to apply calculations.

Required knowledge

Required knowledge for this unit is:

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REQUIRED SKILLS AND KNOWLEDGE

- application of project management and critical path techniques to the organisation of materials, plant and people
- building and construction industry subcontractor system
- building, construction or civil construction practices in on-site project management
- internal documentation systems
- processes and timeframes for regulatory approvals
- relevant state or territory building and construction codes, standards and government regulations
- types of building and construction industry contracts
- types of plant and equipment employed in the undertaking of the organisation's projects.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by preparing a project schedule and the associated documentation for a construction project.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- identify supplier alternatives and gather supply information effectively
- plan and allocate human resources effectively
- produce documentation that meets the timeframes and quality standards established by the organisation
- communicate information effectively within the organisation and to external agencies and the client, as required
- identify and communicate with the appropriate regulatory authorities to gain the necessary approvals.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- documentation that should normally be available in either a building or construction office

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EVIDENCE GUIDE

- relevant codes, standards and government regulations
- office equipment, including calculators, photocopiers and telephone systems
- computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies
- a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature
- a suitable work area appropriate to the construction process.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and

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EVIDENCE GUIDE

separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Contract documentation relevant to the sector and organisation may include:

- Australian standard contracts, including the AS2124 and AS4000 series
- Construction Industry Contract (CIC) suite
- individual organisational contracts
- Joint Contracts Committee (JCC) suite
- Master Builders Association (MBA) and Housing Industry Association (HIA) contracts
- Simple Building Works (SBW), including series 1 and series 2 (SBW2 Lump Sum).

Documentation includes:

- applications for permits and service connections

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RANGE STATEMENT

	• copies of plans, drawings and specifications • environmental applications • parking restriction applications.
Organisational strategies include:	• advertising for tradespersons and other employees • appointing project managers and construction supervisors • briefing organisational personnel • calling for tenders for subcontract operations • purchasing processes for building supplies or construction materials • refining project critical path information.
Project schedule includes:	• human resource schedules • materials delivery schedules • project critical path • project timeframes • schedules of plant and equipment.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4008B Conduct on-site supervision of building and construction projects

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to supervise implementation of administration processes relating to residential and commercial construction projects.

The ability to administer payments, supervise on-site communications, ensure compliance with quality control and complete record keeping processes is essential.

Application of the Unit

Application of the unit

This unit of competency supports the needs of site managers and forepersons and builders responsible for the administration of construction work.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Supervise the administration of claims and payment processes.	1.1. Contract payments are made in accordance with the contract allowance or orders. 1.2. Drawings against allowances are carried out in accordance with organisation policy and procedures. 1.3. Variations to contracts are authorised and corrective action is taken where necessary. 1.4. Back-charges are applied in accordance with policy guidelines. 1.5. Payment of invoices for material supply is authorised. 1.6. Insurance claims for site loss or damage are completed and processed. 1.7. Administrative processes are conducted and supervised with reference to relevant ***regulatory and organisational requirements***.
2. Supervise and maintain on-site communications.	2.1. Diary of ***on-site communication*** and events is maintained, including communications with clients, contractors, inspections, union matters and suppliers. 2.2. File notes detailing specific instructions are prepared and issued. 2.3. Site reports detailing specific supervisory inspections are prepared and kept. 2.4. Variation requests or requirements are communicated to the appropriate person. 2.5. Requests for extensions of time are communicated to the appropriate person. 2.6. Notice of unsatisfactory work is communicated in writing to the appropriate individuals. 2.7. Administrative processes are conducted and supervised with reference to relevant regulatory and organisational requirements.
3. Ensure management of and compliance with quality control procedures.	3.1. Relevant ***quality control procedures*** are identified. 3.2. Site checklists detailing specific items to be inspected at appropriate stages are used and completed. 3.3. Industry and organisational quality manuals and procedures are used in managing the quality process. 3.4. Local authority inspections are arranged. 3.5. Quality requirements are communicated to on-site personnel and building work is assessed against

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ELEMENT	PERFORMANCE CRITERIA
	construction standards. 3.6. Processes are put in place to supervise on-site work to ensure the performance of work to industry, regulatory and contractual standards. 3.7. Contractual quality standards are met.
4. Complete project administration processes.	4.1. ***Project administration processes*** and preparation for practical completion are carried out in accordance with the contract requirements and company policy. 4.2. Practical completion inspection procedure is identified, communicated to the client and applied on site. 4.3. Handover procedures are identified and carried out in accordance with organisational policy. 4.4. Certificates and appropriate client information are provided at handover, including termite protection and appliance warranties. 4.5. Defects liability items are obtained from clients. 4.6. Defects are rectified and client sign-off is obtained. 4.7. Administrative processes are conducted and supervised with reference to relevant regulatory and organisational requirements.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- application of contract terms and conditions
- application of quality processes
- communication skills to:
  - communicate request and requirements
  - communicate with the client and regulatory authorities
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - facilitate on-site meetings and dispute resolution

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REQUIRED SKILLS AND KNOWLEDGE

- read and interpret:
  - quality control procedures
  - regulatory and organisational requirements
  - other relevant workplace documentation
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication
- written skills to:
  - complete site reports
  - develop and maintain site records
- interpersonal skills relevant to the supervision and monitoring of work processes
- numeracy skills to apply calculations.

Required knowledge

Required knowledge for this unit is:

- building and construction industry contract payment system and obligations
- building and construction industry standards
- certification requirements arising from work performed under regulations or local authority requirements
- contract variation procedures and associated documentation requirements
- contracts employed in the building and construction industry.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by the supervision of administration processes relating to a residential or commercial construction project, including the administration of payments, supervision of on-site communications, compliance with quality control and record keeping processes.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully

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EVIDENCE GUIDE

	replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • administer claims, variations, and drawings for work done and materials supplied in accordance with relevant regulatory and organisational requirements • establish functional on-site communication systems that include the systematic gathering of information on site events • implement a site safety policy • maintain and monitor on-site quality processes • assess work against construction quality standards and ensure that rework is carried out • administer on-site project completion procedures and inform client as required.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • documentation that should normally be available in either a building or construction office • relevant codes, standards and regulations • office equipment, including calculators, photocopiers and telephone systems • computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies • technical reference library with current publications on measurement, design, building construction and manufacturers' product literature • suitable work area appropriate to the

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EVIDENCE GUIDE

	construction process. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge • all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in

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relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Regulatory and organisational requirements include:

- building approval conditions
- contract documents
- engineer reports
- environmental standards
- planning and scheduling
- plans and specifications
- safety management plans
- site consultations
- wage and taxation requirements.

On-site communication includes:

- allocating and managing human resources
- applying communication and interpersonal skills to facilitate dispute prevention and resolution
- communicating with regulatory authorities and ensuring conformity with relevant requirements
- dispersal and scheduling of plant and equipment
- maintaining environmental controls and obligations
- managing expenditure
- participating in on-site meetings
- placing orders for supplies or equipment.

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RANGE STATEMENT

Quality control procedure includes:	• checking materials supplied to the site • comparing materials against specifications • quality checklists • regular on-site progress and quality checks • reviews of plans and specifications with clients.
Project administration processes include:	• contract variations • defect identification and rectification • determining project progress • inspections • obtaining required certification • progress payments.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4009B Apply legal requirements to building and construction projects

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to apply legal requirements to building and construction projects of residential and low rise commercial buildings. ('Low rise' licensing classification with reference to Class 1 and 10 construction and Classes 2 to 9 with a gross floor area not exceeding 2000 square metres, not including Type A or Type B construction).

Application of legal requirements includes the capacity to ensure compliance with all contractual requirements. A thorough knowledge of the application of current legal and regulatory requirements is essential.

Application of the Unit

Application of the unit

This unit of competency supports the needs of builders, site managers, forepersons, estimators and other construction industry personnel responsible for applying legal requirements to residential and low rise commercial building and construction projects.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Apply the laws relating to builder licensing or registration.	1.1. ***Licensing or registration legislation*** relevant to the region is researched and identified. 1.2. Classifications for builders, supervisors and managers are applied.
2. Apply OHS legislation and provisions on site.	2.1. Main provisions of ***OHS legislation*** and regulations are researched and identified and local legislative requirements are met. 2.2. Regulations and codes applicable to on-site construction are identified, applied and monitored. 2.3. Site safety signage requirements are identified and applied.
3. Apply the codes, Acts, regulations and standards relevant to construction.	3.1. Current ***codes***, ***Acts***, ***regulations and standards*** applicable to a particular building and construction project are researched. 3.2. Construction process is carried out in accordance with codes, Acts, regulations and standards concerning construction, insurance, sustainability, environmental matters and appropriate by-laws.
4. Comply with insurance and regulatory requirements for housing construction.	4.1. ***Insurance cover*** is arranged in accordance with legal requirements. 4.2. Contract law is applied in accordance with common law principles, relevant state or territory laws and regulations, and fair trading legislation.
5. Apply legislation to financial transactions.	5.1. Payroll systems are set up and administered in compliance with current legislative requirements. 5.2. GST systems are set up and administered in compliance with current legislation.
6. Meet building contract obligations.	6.1. Correct form of contract is selected for the project. 6.2. Contracted work is carried out in accordance with the contractual obligations applicable to both parties. 6.3. Conditions of the contract, including approvals and financial matters are met.
7. Apply industrial relations policies and obligations relevant to housing construction.	7.1. Relevant ***industrial relations policies and obligations*** are researched, identified and applied. 7.2. Subcontract companies that comply with company policy and obligations under subcontract agreements are identified and contracted. 7.3. Relevant awards are applied to contracts. 7.4. Workplace agreements are used in accordance with

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ELEMENT	PERFORMANCE CRITERIA
	company policy. 7.5. Proactive measures are taken to ensure discrimination and harassment are not practised in the workplace. 7.6. Provisions of training agreements are identified and applied. 7.7. Reference material on access to industrial relations or legal information is made available to employees.
8. Apply dispute resolution processes.	8.1. Organisational dispute resolution processes are applied. 8.2. Customer complaints are dealt with according to company policy. 8.3. Disputes are documented and outcomes recorded and maintained.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to research, access and interpret complex documents
- communication skills to:
  - communicate with local or regulatory authorities on matters relating to site conditions or approvals and to negotiate on matters concerning industrial relations by telephone, or face to face
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
  - written skills to communicate by memo, letter, facsimile or email with subcontractors, staff, clients and regulatory authorities
- interpersonal skills relevant to the supervision and monitoring of work processes
- numeracy skills to apply calculations.

Required knowledge

Required knowledge for this unit is:

- building and construction industry contracts

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REQUIRED SKILLS AND KNOWLEDGE

- OHS frameworks and obligations under federal, state and territory legislation and regulation
- organisational policies and procedures related to discrimination and harassment
- reasonable understanding of federal, state or territory anti-discrimination and equal employment opportunity legislation
- risk management processes and practices and the planning required to develop plans
- state or territory building and construction codes, standards and government regulations
- workplace safety requirements.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by the preparation of a portfolio of the legislative requirements for one residential and one low rise commercial building and construction project case study. ('Low rise' licensing classification with reference to Class 1 and 10 construction and Classes 2 to 9 with a gross floor area not exceeding 2000 square metres, not including Type A or Type B construction).

The unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- understand appropriate registration, licensing or compliance requirements of state or territory registration authorities
- meet appropriate business registration

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EVIDENCE GUIDE

requirements

- identify and specify appropriate insurance documentation, citing protection that meets local industry requirements
- identify and specify requirements for compliance with:
  - OHS legislation
  - legislation pertaining to financial transactions, including payment of wages and subcontractor and supplier invoices
  - relevant building and construction codes, Acts, regulations and standards
  - sustainability and environmental legislation
  - industrial relations laws
  - legal obligations of contractual agreements.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- documentation that should normally be available in either a building or construction office
- relevant codes, standards and government regulations
- office equipment, including calculators, photocopiers and telephone systems
- technical reference library with current publications on measurement, design, building construction and manufacturer's product literature
- a suitable work area appropriate to the construction process.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

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EVIDENCE GUIDE

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

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Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Licensing or registration legislation includes state laws such as:	• Builders Registration Act 1939 and the Home Building Contracts Act 1991 in Western Australia • Home Building Act and Regulations 1989 in New South Wales.
OHS legislation includes state laws such as:	• Occupational Health and Safety Act 1983 in New South Wales • Occupational Health and Safety Act 1984 in Western Australia • Occupational Health and Safety Act 1985 in Victoria • Occupational Health and Safety Act 1986 in South Australia • WorkCover Queensland Act 1996.

Codes, ***Acts***, ***regulations and standards*** include:	• latest editions of:
	  • AS1720 Timber structures
	  • AS3600 Concrete structures
	  • AS4100 Steel structures
	• relevant Australian building and construction standards
	• relevant state or territory fair trading Acts and regulations
	• relevant state, territory and local authority planning and other approval requirements
	• Timber Framing Code of Australia.

Insurance cover includes:	• home owner's warranty • superannuation • workers' compensation.
Industrial relations policies and obligations include:	• federal and state industrial instruments • federal and state industrial legislation.

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Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4010B Apply structural principles to residential low rise constructions

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to apply structural principles to the erection or demolition of low rise residential structures using conventional methods. The unit addresses those structures classified by the Building Code of Australia (BCA) as Class 1 and Class 10. Knowledge of the application of structural principles in accordance with Australian standards is essential.

Application of the Unit

Application of the unit

This unit of competency supports the needs of builders, site managers, forepersons and other managers in the building and construction industry responsible for overseeing and managing the demolition or erection of structures.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Apply structural principles when planning the erection or demolition of a structure.	1.1. Main ***structural principles*** that apply to the erection or demolition of a ***residential low rise*** structure are identified. 1.2. Structural performance of a structure is described in terms of the effect of section properties on various materials. 1.3. Structural performance characteristics of slabs, floors, beams, columns and retaining walls are explained and applied to the planning of the construction work. 1.4. Demolition of existing structures is coordinated in accordance with legislative and planning requirements, environmental standards, and safe work practices.
2. Analyse and plan for the structural integrity of Class1 and Class 10 buildings.	2.1. Relevant ***industry professionals*** are consulted as required to provide advice regarding the design process and the structural integrity of the proposed Class 1 or Class 10 building. 2.2. ***Project documentation*** is collected and analysed to assist in the analysis of plans and specifications. 2.3. Project documentation is analysed for compliance with BCA requirements for bushfire, high wind, earthquake and alpine environments. 2.4. New and emerging building technologies are assessed for application to the construction process and their compliance with BCA requirements and Australian standards. 2.5. Pre-commencement site inspection is conducted to confirm analysis.
3. Plan, coordinate and manage the laying of footings.	3.1. Footings are set out in accordance with building's plan. 3.2. Structural integrity of the footings specified in building's plan is assessed for compliance with relevant codes and accepted industry construction principles. 3.3. ***Footings*** specified in building's plan are laid and checked for compliance with project documentation. 3.4. Damp coursing, provision of termite barriers, and other relevant techniques are planned, implemented and checked in accordance with codes, standards and industry practice.

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ELEMENT	PERFORMANCE CRITERIA
4. Plan, coordinate and manage the laying of floor system.	4.1. Concrete slab or bearers and joists specified in building's plan are assessed for structural integrity and compliance with relevant codes and accepted industry construction principles. 4.2. Laying of ***floor system*** specified in building's plan is supervised and checked for compliance with project documentation.
5. Plan, coordinate and manage the building of structural and non-structural wall systems.	5.1. Technical construction principles and performance of ***materials*** used in the construction are identified and analysed in the planning of the building and construction project. 5.2. Application of bracing requirements, tie-downs, tolerances, allowances, and fixing and installation of components are planned, implemented and checked for compliance with relevant Australian standards, codes and manufacturer specifications. 5.3. Structural timber members are selected for low rise buildings to conform to AS1684 requirements. 5.4. Processes are put in place and managed to ensure quality of the frame, whether factory pre-cut and pre-nailed, factory pre-cut and assembled on site, or cut and assembled on site. 5.5. Vapour permeable sarking or a waterproof membrane, relevant to construction method, is attached and checked.
6. Plan, coordinate and manage the building of roof system.	6.1. Structural integrity of roof system components specified in building's plan is assessed for compliance with relevant codes and accepted industry construction principles. 6.2. Erection of roof trusses is planned, implemented and checked in accordance with requirements of building plan, ***type of roof*** being constructed, relevant codes and accepted industry construction principles. 6.3. Processes are put in place and managed to ensure quality of the manufactured roof trusses or hand-cut roof system. 6.4. Roof sarking and cladding are planned and installation is supervised and checked for compliance with codes, standards and industry practice.
7. Plan, coordinate and manage the external wall cladding of structure.	7.1. Structural performance of ***cladding*** to be used for bracing in the frame construction is assessed for compliance with relevant codes, manufacturer specifications and accepted industry construction

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ELEMENT	PERFORMANCE CRITERIA
	principles. 7.2. Installation of the cladding, as specified in building's plan, is supervised and checked for compliance with standards and accepted industry construction principles. 7.3. Installation of windows and external doors is supervised to ensure compliance with relevant codes, manufacturer specifications and accepted industry construction principles.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- apply manufacturer specifications and Australian standards and codes
- apply structural principles to a variety of structures within BCA Classes 1 and 10
- communication skills to:
  - consult with industry professionals
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret project documentation
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
- identify and analyse relevant information
- select structural members based on project or specification requirements
- work safely to OHS regulations and site requirements.

Required knowledge

Required knowledge for this unit is:

- building and construction industry contracts
- relevant state or territory building and construction codes, standards and government regulations
- underlying mathematics related to structural analysis
- workplace safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by the effective application of structural principles and concepts in accordance with the range of variables and application to only one sector of the building and construction industry.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- assess the structural integrity of a variety of structures found on building and construction sites
- apply the structural principles behind the safe erection and demolition of a low rise structure classified within the BCA as Class 1 and 10
- apply technical construction principles to the appropriate selection, integration and building in of construction elements and components
- coordinate, plan, implement and check the building of a low rise structure.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- documentation that should normally be available in either a building or construction

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EVIDENCE GUIDE

office

- relevant codes, standards and government regulations
- office equipment, including calculators, photocopiers and telephone systems
- computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies
- technical reference library with current publications on measurement, design, building construction and manufacturers' product literature
- suitable work area appropriate to the construction process.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances

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assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Structural principles include:
- behaviour of structural materials
- loads and loading
- performance of beams
- performance of columns
- performance of roof trusses
- section properties
- solution of force systems
- wind bracing.

Residential low rise buildings as described within the BCA are:
- Class 1
- Class 10.

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RANGE STATEMENT

Industry professionals include:	• architects • draftspersons • engineers • quantity surveyors • surveyors.
Project documentation includes:	• building approval plans • contract plans • designs and specifications • engineer footing designs and specifications • original contour survey plan • registered plans • retaining walls • site plans • soil investigation reports • structural floor systems, wall systems and roof systems • tanking designs and specifications • underpinning, rock anchors and shoring designs and specifications.
Footings include:	• bored pier footings • columns or stumps • concrete slab floors • piers and beams.
Floor system components of the bearers and joists include:	• compressed sheet wet area flooring • engineered floor joists • fitted (cut-in) floors • platform floor construction • sheet flooring • tongue and groove flooring.
Materials include:	• cavity brick • concrete block • structural steel • timber.
Type of roof includes:	• box gable • dual pitch roof • Dutch gable • Dutch hip • gable end • hip and valley • north light

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RANGE STATEMENT

Cladding used on timber frame constructions includes:	• skillion. • brick veneer • coatings over base materials • colourbond or zincalume sheeting • fibre cement or compressed wood panelling • weatherboards.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4011B Apply structural principles to commercial low rise constructions

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to apply structural principles to the erection or demolition of low rise projects of a more complex nature than single residential dwellings, which are typically commercial structures classified in the Building Code of Australia (BCA) as Classes 2 to 9 with a gross floor area not exceeding 2000 square metres but not including Type A or Type B construction.

Knowledge of the application of structural principles in accordance with Australian standards is essential.

Application of the Unit

Application of the unit

This unit of competency supports the needs of builders, site managers, forepersons and other managers in the building and construction industry responsible for overseeing and managing the erection or demolition of low rise structures.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Apply structural principles to the planning of the erection or demolition of a structure.	1.1. Main ***structural principles*** that apply to erection or demolition of a ***low rise*** commercial structure are identified. 1.2. Structural performance of a structure is described in terms of the effect of section properties on various ***materials and their related construction methods***. 1.3. Structural performance characteristics of slabs, beams, columns and retaining walls are explained and applied to planning of the construction work. 1.4. Demolition of existing structures is coordinated in accordance with safe work practices and legislative, environmental and planning requirements.
2. Analyse and plan for the structural integrity of Class 2 to 9 buildings.	2.1. Relevant ***industry professionals*** are consulted as required to provide advice regarding the design process and structural integrity of proposed commercial low rise building. 2.2. ***Project documentation*** is collected and analysed to assist in the analysis of plans and specifications. 2.3. Project documentation is analysed for compliance with BCA requirements for bushfire, high wind, earthquake and alpine environments. 2.4. New and emerging building technologies are assessed for application to the construction process and their compliance with BCA requirements and Australian standards. 2.5. Pre-commencement site inspection is conducted to confirm analysis.
3. Plan, coordinate and manage laying of footing systems.	3.1. ***Footing systems*** are set out in accordance with building's plans. 3.2. Structural integrity of the footings specified in building's plan is assessed for compliance with relevant codes and accepted industry construction principles. 3.3. Footings specified in building's plan are laid and checked for compliance with project documentation. 3.4. Damp coursing and provision of termite barriers and other relevant techniques are planned, implemented and checked in accordance with codes, standards and industry practice.
4. Plan, coordinate and manage laying of	4.1. Floor system components specified in building's plan are assessed for structural integrity and compliance

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ELEMENT	PERFORMANCE CRITERIA
floor system.	with relevant codes and accepted industry construction principles. 4.2. Laying of ***structural floor system*** specified in building's plan is supervised and checked for compliance with project documentation.
5. Plan, coordinate and manage the building of structural wall systems and wall cladding systems.	5.1. Technical construction principles and performance characteristics of ***structural wall systems*** and ***wall cladding systems*** are identified and analysed in the planning of the building and construction project. 5.2. Processes for erecting wall systems and wall cladding systems are identified, implemented and checked for compliance with manufacturer specifications and relevant Australian standards and codes. 5.3. Building plans and relevant standards and codes are identified and implemented to ensure appropriate allowances have been made for ***relevant services*** to be installed. 5.4. Windows and external doors are installed in compliance with relevant codes, manufacturer specifications and accepted industry construction principles.
6. Plan, coordinate and manage the building of structural roof systems and roof cladding systems.	6.1. Structural integrity of the ***structural roof system*** and ***roof cladding system*** components specified in building's plan is assessed for compliance with relevant codes and accepted industry construction principles. 6.2. Construction of roof system and roof cladding system, including details of service penetrations, skylights and roof ventilators, is planned, implemented and checked in accordance with building plan's requirements, type of roof being constructed, relevant codes and accepted industry construction principles. 6.3. Processes are put in place and managed to ensure quality of finished roof system.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- analytical skills and the capacity to foresee potential problems
- apply Australian standards, codes and manufacturer specifications
- apply structural principles to a variety of low rise structures
- construction management and planning techniques
- coordination of the work and advice of internal and external professionals
- communication skills to:
  - consult with industry professionals
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret project documentation
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
- identify and analyse relevant information
- low rise construction building problem solving
- numeracy skills to apply calculations
- select structural members based on project or specification requirements
- work safely to OHS regulations and site requirements.

Required knowledge

Required knowledge for this unit is:

- building and construction industry contracts
- new and emerging building technologies, techniques and materials
- relevant state or territory building and construction codes, standards and government regulations
- underlying principles related to structural analysis
- workplace safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by the effective application of structural principles and concepts for erection and demolition in accordance with the range of variables and application in a low rise building project.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- assess structural integrity of a variety of structures found on building and construction sites
- apply structural principles behind the safe erection and demolition of low rise structures classified within the BCA as Classes 2 to 9 with a gross floor area not exceeding 2000 square metres but not including Type A or Type B construction
- apply technical construction principles to the appropriate selection, integration and building in of construction elements and components
- coordinate, plan, implement and check building of a low rise structure.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

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EVIDENCE GUIDE

Resource implications for assessment include:

- documentation that should normally be available in either a building or construction office
- relevant codes, standards and government regulations
- office equipment, including calculators, photocopiers and telephone systems
- computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies
- technical reference library with current publications on measurement, design, building construction and manufacturers' product literature
- suitable work area appropriate to the construction process.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace

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- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Structural principles include:

- loads and loading
- section properties
- behaviour of structural materials
- performance of beams
- performance of columns
- performance of roof trusses
- principles of formwork

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RANGE STATEMENT

	• solution of force systems • wind bracing.
Low rise commercial buildings as described within the BCA are:	• Classes 2 to 9 • with a gross floor area not exceeding 2000 square metres, not including Type A or Type B construction.
Materials and their related construction methods may include:	• brick veneer and cladding over timber-framed and lightweight section steel-framed construction • cavity brick construction • earth-wall construction • lightweight concrete construction, such as construction of autoclaved aerated concrete (AAC) • pole frame construction • portal frame construction • post and beam construction • post and truss construction • single-leaf (reinforced) masonry construction • tilt-slab construction.
Industry professionals include:	• architects • draftspersons • engineers • quantity surveyors • surveyors.
Project documentation includes:	• building approval plans • contract plans • design and specifications • engineer's footing design and specifications • original contour survey plans • registered plans • retaining walls and tanking design and specifications • site plans • soils investigation reports • structural floor systems, wall systems and roof systems • underpinning, rock anchors and shoring design and specifications.
Footing systems include:	• concrete slab floors • drilled or driven piles

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RANGE STATEMENT

	• mass concrete piers • reinforced concrete piers and beams • screw piles • waffle pod slabs.
Structural floor system includes:	• brick bases • engineered timber products • panel systems of concrete and AAC • suspended and slab-on-ground concrete slab floors • timber and steel floor construction.
Structural wall systems include:	• composite walls featuring tilt-slab, post and beam, pole and truss and portal frame • earth walls, including rammed earth and mud brick • framed walls incorporating timber, engineered timber products and lightweight section steel • masonry walls incorporating cavity brick, single-leaf masonry and lightweight concrete (AAC).
Wall cladding systems include:	• boarding • coatings over base materials • sheeting • tilt-slab • unfired, fired and autoclaved masonry.
Relevant services may include:	• ducting for heating and cooling • electrical, electronic and communication systems • extractive vacuum and exhaust systems • passive and active fire detection and prevention systems • plumbing and drainage • powered systems for operating doors and windows • smoke control and containment systems.

Structural roof system includes:	• for roof types including:
	  • gable including dual pitch
	  • hip
	  • north light
	  • rafter and purlin
	  • skillion
	• prefabricated and site fabricated trussed roof

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RANGE STATEMENT

	framing.
Roof cladding system includes:	• concrete, clay and metal tiles • shakes and shingles • short and long run metal sheeting.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4012B Read and interpret plans and specifications

Modification History

Minor change in unit descriptor and evidence guide overview information
Equivalent to CPCCBC4012A

Unit Descriptor

This unit of competency specifies the outcomes required to read and interpret plans and specifications applicable to low rise residential and commercial projects in order to inform estimation, planning and supervisory activities.

Application of the Unit

This unit of competency supports the needs of site managers, forepersons, estimators, builders, managers and other building and construction industry personnel responsible for ensuring the currency of plans and specifications and for reading and interpreting these for application to estimation, planning and related supervisory activities.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	Identify types of drawings and their purposes.	1.1	Purpose and advantage of different ***types of drawings*** are identified.
		1.2	Different ***aspects of drawings*** are identified.
2	Apply commonly used symbols and abbreviations.	2.1	Commonly used symbols and abbreviations on drawings are identified, understood and applied
		2.2	Common building and construction terms used on drawings are identified, understood and applied
3	Locate and identify key features on a site plan.	3.1	Building site is identified from location drawings.
		3.2	True north and building orientation are identified from details provided on site plan.
		3.3	Key features of site plan are identified.
4	Identify and locate key features on drawings.	4.1	Key features of plans, elevations and sections are identified.
		4.2	Client requested variations to standard plans are identified on drawings.
5	Correctly read and interpret specifications.	5.1	Provisional sum (PS) and prime cost (PC) values are identified and correctly applied.
		5.2	Customer variations to standard specifications are identified.
		5.3	Correct interpretations of essential elements are applied to estimation, planning and supervisory tasks and are communicated.
		5.4	Building codes or standards affecting the work to be undertaken are identified, including references to Australian standards and the National Construction Code (NCC).

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6	Identify non-structural aspects to the specification.	6.1	Key features of products included in the ***specification*** are identified, including the design, purpose, aesthetics and cost relationships.

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - consult with industry professionals
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - interact effectively by telephone, facsimile, email and in writing with clients, organisational personnel and appropriate local authorities
  - read and interpret:
    - tender documentation
    - other relevant workplace documentation
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
  - written communication skills to produce required documentation
- identify and analyse relevant information
- numeracy skills to calculate labour hours and costs and material quantities and costs
- translation of documented requirements into on-site activities and site and structural features from two-dimensional to three-dimensional formats.

Required knowledge

Required knowledge for this unit is:

- building and construction practices
- internal documentation systems
- regulatory approvals processes and timeframes
- relevant state or territory building and construction codes, standards and regulations
- types of building and construction drawings and drawing perspectives
- types of building and construction industry contracts.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by correctly interpreting a range of plans and specifications for activities relating to low rise residential and commercial construction projects.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- read and interpret plans and specifications including identification of key features, levels, contours, sections, service entry points, site features to be removed or retained and other details pertinent to the construction process
- identify the characteristics and features of sites and structures pertinent to a construction project, including:
  - determine correct orientation of structures on site
  - establish location of key on-site features in relation to building or other structures
- identify and incorporate customer variations to agreed plans and specifications
- correctly interpret essential elements and apply these to estimation, planning and supervisory tasks
- effectively communicate specification changes to organisational personnel and confirm variations with the client.

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Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- documentation that should normally be available in either a building or construction office
- relevant codes, standards and government regulations
- office equipment, including calculators, photocopiers and telephone systems
- computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies
- technical reference library with current publications on measurement, design, building construction and manufacturer's product literature
- suitable work area appropriate to the construction process.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

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Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Types of drawings include:

- CAD drawings
- construction information
- detailed amendment drawings
- details of:
  - roads and pathways
  - parking areas
  - boundaries and landscaping
- initial sketches
- preliminary and final drawings and plans
- presentation drawings

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Aspects of drawings include:

- service details, such as:
  - wiring
  - piping
  - ducts and waste disposal
- sketch plans
- working drawings.
- elevations
- plans
- sections
- views in isometric projection and perspective.

Key features of site plan include:

- access and egress
- contours and slopes
- drainage lines
- easements
- existing dwellings, buildings or other structures
- location and situation
- major geological and topographical features
- paving
- retaining walls
- service connection points
- set backs
- stormwater disposal
- trees and vegetation.

Specification includes:

- levels and survey information
- materials lists
- performance data and material technical data
- schedules of quantities
- stress, load and bearing calculations.

Unit Sector(s)

Functional area

Unit sector Construction

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Custom Content Section

Not applicable.

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CPCCBC4013A Prepare and evaluate tender documentation

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to evaluate contract specifications and information and to prepare tender documents associated with projects in the building and construction industries.

Knowledge of tender preparation and interpretation of project demands and requirements and the capability to bring together a body of diverse information are essential. How to find the information and present it in a manner that meets organisational needs in short timeframes is important, as is the ability to manage time effectively.

Application of the Unit

Application of the unit

This unit of competency supports the needs of builders, estimators and managers in the building and construction industry who have a responsibility to evaluate and prepare tenders for residential and commercial projects.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Evaluate contract risk.	1.1. Contracts are selected according to company policy. 1.2. ***Tender documents*** for the selected contracts are evaluated, and ***risks*** to be considered when preparing the tender are identified.
2. Prepare tender documentation.	2.1. All information necessary for preparing the tender is identified and obtained. 2.2. Company procedures and instructions are followed in the preparation of the tender.
3. Identify and attach appropriate supporting documentation.	3.1. Information and ***supporting documentation*** required to support the tender are accurately identified and selected. 3.2. Vital information, drawings, specifications or other supporting documents are attached to the tender documentation as required.
4. Evaluate completed tender documentation.	4.1. Preliminary evaluation of completed tender documentation is conducted. 4.2. Tender documents and calculations are checked to ensure conformity with company financial and administrative guidelines.
5. Obtain tender approval or endorsement.	5.1. Tender documentation is provided to the appropriate staff member for approval or endorsement. 5.2. Final documents, including amendments, are prepared for submission to the client.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- calculate material quantities and costs
- calculate labour hours and costs
- communication skills to:
  - consult with industry professionals
  - enable clear and direct communication, using questioning to identify and

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REQUIRED SKILLS AND KNOWLEDGE

confirm requirements, share information, listen and understand
- read and interpret:
  - tender documentation
  - other relevant workplace documentation
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication
- written skills to produce required documentation to company standards
- estimate labour and materials costs from written information
- numeracy skills to calculate labour hours and costs and material quantities and costs
- use appropriate costing software programs.

Required knowledge

Required knowledge for this unit is:

- operations and structure of the organisation's costing and contracting system
- state or territory building and construction codes, standards and government regulations relevant to the form of building or construction being undertaken
- types of building, construction or civil contracting drawings and specifications
- types, scope and usage of labour through the employee and subcontractor systems.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed by the preparation of complete tender documentation for a construction contract. This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • identify requirements of selected contracts for tender • gather detailed information effectively • check documentation and calculations in short timeframes • produce documentation that meets the quality standards established by the organisation • communicate effectively, both verbally and in writing.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • documentation that should normally be available in a building, construction or civil contracting office • relevant codes, standards and government regulations

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EVIDENCE GUIDE

- office equipment, including calculators, photocopiers and telephone systems
- computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies
- a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature
- a suitable work area appropriate to the construction process.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete

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confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Tender documents include:

- cost schedules
- details of specialist resources
- details of specific terms and conditions to be included and excluded in relation to contracts
- estimated timeframes
- human resource details, including known subcontractors
- materials specifications
- plans and drawings
- site layout information.

Risks include:

- breaches of contract
- circumstances, such as:
  - delivery delays that delay project completion

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RANGE STATEMENT

	• subsequent delays in progress payments • labour shortages • weather • disputes over payments • exposure through clauses that work against the organisation • failure to adequately anticipate labour or materials costs • inappropriate funding levels and funding shortfalls • industrial disputes through misunderstandings or overt action • risk of default or non-performance of key players.
Supporting documentation includes:	• artist's impressions • documentation processes required by building information modelling (BIM) • organisational information • product information • promotional materials • reports or findings beneficial to the organisation.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4014A Prepare simple building sketches and drawings

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to produce sketches and drawings. The sketches may be used to clarify or communicate ideas to clients or other parties. They may also be simplified versions taken from architectural drawings, designed to capture design concepts or options. The sketches may be used for estimating purposes and to show measurements and other requirements for building and construction works. This unit does not describe more complex drafting skills.

Application of the Unit

Application of the unit

This unit of competency supports the needs of builders, experienced tradespersons, project managers and estimators with a responsibility for preparing sketches and drawings.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to make sketches and drawings.	1.1. ***Types of drawings required*** and ***key features*** to be recorded are identified in compliance with the scope and standard of the job being undertaken. 1.2. ***OHS requirements*** on site are identified and followed. 1.3. ***Tools and equipment*** required for inspection and measurement and for producing drawings are gathered and checked for serviceability.
2. Create simple sketches and drawings.	2.1. Inspection of relevant area is carried out as required and measurements are taken and recorded. 2.2. Simple two and three-dimensional sketches and drawings are created using ***standard drawing conventions*** and incorporating relevant codes and standards. 2.3. Sectional drawings of simple structural elements are created using standard drawing conventions.
3. Notate and process drawings.	3.1. Essential information is recorded on the drawing with symbols and abbreviations according to standard drawing conventions. 3.2. Drawings are labelled, dated and processed according to organisational administration and quality procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
- drawing techniques

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REQUIRED SKILLS AND KNOWLEDGE

- interpret and apply relevant standards and codes
- numeracy skills to apply measurements and calculations.

Required knowledge

Required knowledge for this unit is:

- drawing conventions and features, including direction, scale, key, contours, symbols and abbreviations
- requirements of the relevant codes, standards, statutory and authority requirements
- safe work methods.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed by creating a set of sketches and drawings for a small work project in the relevant field of expertise. Measurements of components, sub-assemblies, products, models, equipment, layouts or facilities needed for the preparation of the required drawings and calculations of required dimensions and other drafting details based on the measurements and other relevant information should be made and recorded. This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • produce clear and effective drawings and sketches with appropriate notations and labelling • apply appropriate techniques for making inspections and taking measurements • make good incursions into the fabric of a building • comply with OHS regulations applicable to workplace operations • apply organisational quality procedures and processes • select and use appropriate processes, tools and equipment.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

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Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include access to:

- an appropriate work site
- appropriate documentation and data related to tasks
- scaffolding and fall protection equipment
- tools and equipment relevant to activity process.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and

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EVIDENCE GUIDE

separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Types of drawings required include:
- floor plan
- land boundaries and footprint of building
- orthographic drawings
- schematic drawings of wiring and pipe work
- sectional views.

Key features to be recorded may include:
- ceiling heights and variations
- doors
- light fittings and power supplies
- services
- wall penetrations
- walls.

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RANGE STATEMENT

OHS requirements include:	• detailing appropriate installation of scaffolding • detailing power supplies • details of all services • understanding hazards located in the area • use of personal protective equipment.

Tools and equipment include:	• recording devices, including:
	  • computer
	  • digital camera
	  • pen and paper.

Standard drawing conventions include:	• standard design symbols common to the building and construction industries.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4015A Prepare specifications for all construction works

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to prepare specifications, using standard forms of specification as a basis. The preparation of a clearly understood specification for construction works requires establishing the level of detail required and identifying all the inherent contractual obligations. The capacity to develop specifications, that may range from outline to detailed specifications and which conform to National Specification System of Australia (NATSPEC) or other industry standards, is required.

The specifications may stipulate materials, quality of work and project timelines. In order to achieve the outcomes for this unit, knowledge of relevant industry legislation and standards, and the ability to research information and communicate well with clients are required.

Application of the Unit

Application of the unit

This unit of competency supports needs of builders, site managers, estimators, forepersons and other construction industry personnel responsible for preparing specifications for residential and commercial construction projects.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine specification requirements.	1.1. Project brief, working drawings, development approval and other relevant documents are examined to identify essential information to be included in the specification. 1.2. ***Standard specifications*** are examined to determine suitability for adaptation to the current project. 1.3. Non-standard requirements are developed and where technical aspects require clarification, advice is sought from specialists.
2. Assess the nature and scope of the work.	2.1. Site inspection is conducted to establish site layout and preliminary site-work requirements, and site details and features are recorded. 2.2. Specification includes all relevant details at a level necessary to describe clearly the nature and ***scope of the work***, including ***prescriptive and performance requirements***. 2.3. Research is undertaken to establish appropriate schedules, using relevant ***data sources***. 2.4. Details are tabulated and cross-referenced to ensure consistency between the design brief, working drawings and specifications. 2.5. Details in the specification conform to industry codes of practice, Australian standards and relevant statutory requirements. 2.6. Information requested from specialists, colleagues and clients is coordinated and added to the specifications where required.
3. Prepare the specification document.	3.1. Specification clearly identifies the ***contractual obligations*** and rights of the parties involved. 3.2. Specification document is complete, checked thoroughly for compliance with requirements and edited. 3.3. Specification is presented to the client in the required format and timeframe.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- apply numeracy skills to workplace requirements
- attention to detail in preparing documentation
- client service standards
- commonly used document management
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - enable liaison with specialists to seek advice and request information
  - prepare, read and interpret:
    - codes of practice
    - design briefs
    - plans and drawings
    - regulations
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to prepare reports and specifications
- construction work site teamwork
- identifying specification requirements
- identifying documentation requirements for a range of sources
- product and service analysis
- research methods and investigation techniques relevant to construction specification preparation.

Required knowledge

Required knowledge for this unit is:

- client requirements
- document control
- documentation requirements for specifications
- organisational policy relating to specifications
- industry codes of practice
- NATSPEC
- relevant Australian standards
- relevant legislation, including contract law and trade practices legislation
- research sources to determine schedules
- schedule of rates

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REQUIRED SKILLS AND KNOWLEDGE

- standard specification documents
- types of specification and their use.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed by the effective preparation of a specification meeting NATSPEC and other relevant standards applicable to a building project. This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • use a range of research methodologies and tools • correctly identify and use specifications for the range of work • apply contractual principles to the specification drafting.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include

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EVIDENCE GUIDE

access to documentation such as:

- computer data files
- detailed specifications that address specific components such as mechanical, structural, electrical or other requirements
- documentation requirements arising from BIM
- local, state and commonwealth government documents and registers
- media reports
- NATSPEC or other industry standard specifications
- policy statements
- preliminary, outline or developed specifications
- publications and journals
- statistical summaries
- statutes.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the

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EVIDENCE GUIDE

workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Standard specifications include:

- detailed specifications that address specific components such as mechanical, structural, electrical or other requirements
- developed specifications
- documentation requirements arising from building information modelling (BIM)
- NATSPEC or other industry standard

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RANGE STATEMENT

	specifications
	• preliminary or outline specifications.
Scope of the work includes:	• allowance for the provision of services • characteristics • compatibility • dimensions • fitout • lining systems • location • patterns • quantities • sizes • surfaces • type of product or service.

Prescriptive and performance requirements include:	• performance requirements:
	  • standards of work
	  • work schedules
	  • milestones
	• prescriptive requirements:
	  • detail relating to materials and quality of work
	  • nominated subcontractors
	  • provision and costs of site access and facilities
	  • quality assurance.

Data sources include:	• computer data files • local, state and federal government documents and registers • media reports • policy statements • publications and journals • statistical summaries • statutes.
Contractual obligations include:	• expected performance levels • insurance requirements • OHS issues • prescriptive requirements • type of tender.

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Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4016A Administer a construction contract

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency specifies the outcomes required to administer building and construction contracts for either residential or commercial projects.

Application of the Unit

Application of the unit	This unit supports the needs of builders, estimators, trade contractors and other building and construction professionals responsible for administering contracts for building work.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and analyse the essential elements, sections and clauses of a business contract.	1.1. Various types of ***building and construction contracts*** are identified and the appropriate application of each type is analysed. 1.2. Legislative requirements relating to building and construction contracts are identified and applied. 1.3. Essential terms and elements of a valid contract are identified and analysed. 1.4. Importance of identifying an intention to create legal relations is analysed. 1.5. Rights and liabilities of parties under a contract are identified and analysed. 1.6. Common building contract terms and procedures are identified and applied. 1.7. Circumstances that bring about a breach of contract are identified and analysed.
2. Select an appropriate contract for the works to be undertaken.	2.1. Contract, appropriate for the type of construction, is accurately selected. 2.2. ***Range of documents*** that collectively make up a contract is accurately identified and prepared. 2.3. Requirements associated with an offer and acceptance of a contract are accurately identified and applied. 2.4. Capacity of the parties to form a binding agreement in the form of a contract is confirmed. 2.5. Factors associated with the parties' consent to a contract are identified and applied.
3. Identify and apply the factors involved in the termination of a business contract.	3.1. Impact and effects of repudiation of a contract by one party are identified and analysed. 3.2. Agreed definition of acceptance of repudiation by the other party is identified and applied. 3.3. Definitions of unreasonable or vexatious notice are identified, agreed and applied. 3.4. Definition of the conditions for completion at the cost of the contractor is identified and applied. 3.5. Definition of the effect of ousting the contractor from the building or construction site is identified and applied. 3.6. Definition of abandonment of a contract is identified and applied. 3.7. Contracts are terminated in accordance with relevant

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ELEMENT	PERFORMANCE CRITERIA
	legislation and contract provisions.
4. Administer the contract.	4.1. Contract rise and fall amounts are accurately calculated. 4.2. Progress payments due under the contract are accurately processed. 4.3. Applications for extension of time are processed in accordance with company policy and contract conditions. 4.4. Variations to contract are identified, negotiated and documented. 4.5. Action is taken to minimise liquidated damages or penalties nominated in the contract. 4.6. Contracts are administered and contractual disputes resolved in accordance with contract and relevant legislation and regulations. 4.7. Conditions for issuing a final certificate are identified and applied.
5. Finalise a contract.	5.1. Definition of practical completion of contract is identified and applied. 5.2. Definition of defects liability under a building or construction contract is identified and applied. 5.3. Appropriate certificate is issued upon completion of the contract work. 5.4. Documentation arising from finalisation of a contract is completed and secured for records purposes.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - communicate with clients, subcontractors, colleagues and external parties by phone, facsimile, email or in writing
  - communicate with members of the organisation and external parties, including

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REQUIRED SKILLS AND KNOWLEDGE

clients and subcontractors
- enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
- facilitate drafting detailed responses to queries relating to the finer points of contracts
- read and interpret:
  - complex legal text
  - construction schedules
  - contracts
  - reports
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication
- written skills to complete workplace documentation, including drafting responses to queries relating to the finer points of contracts

- identify and analyse relevant information
  - maintain files
  - monitor price variations in construction products and services
  - numeracy skills to apply calculations
  - use and apply data.

Required knowledge

Required knowledge for this unit is:

- basic understanding of the Australian legal system and its relevance to contracts
- contracts required or supplied by regulatory authorities
- definitions and interpretations commonly applied to contracts
- legal meanings of terms and clauses in building and construction contracts
- relationships between the organisation and its clients
- various contract types and the circumstances they cover.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed by the selection, development and administration of appropriate contracts that meet organisational and industry standards and relate to residential or commercial projects. This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	It is essential that competence is demonstrated in the relevant aspects of contract selection, insertion of appropriate clauses and administration of events arising from contract clauses, including rise and fall and progress payments. A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • select right contract for particular project • select appropriate clauses and conditions within the contract • administer contract to the standard required by the organisation and according to legal or regulatory requirements that may exist within the state or territory in which work is being done • determine appropriate measures to be taken in the event of an anomaly in the rendering of the contract.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

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EVIDENCE GUIDE

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- documentation that should normally be available in either a building or construction office
- relevant codes, standards and government regulations
- office equipment, including calculators, photocopiers and telephone systems
- computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies
- a technical reference library with current publications on measurement, design, building construction and manufacturer's product literature
- a suitable work area appropriate to the construction process.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role

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EVIDENCE GUIDE

and the practical requirements of the workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Building and construction contracts include:

- Australian standard contracts (including the AS2124 and AS4000 series)
- Construction Industry Contract (CIC) suite
- contracts required or supplied by regulatory authorities
- individual organisational contracts

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RANGE STATEMENT

	• Joint Contracts Committee (JCC) suite • MBA and HIA contracts • Simple Building Works (SBW), including series 1 and series 2 (SBW2 Lump Sum).
Range of documents includes:	• equipment, site accommodation and services information • human resource projections • materials lists • plans, drawings and specifications • project timelines • schedules.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4017A Arrange resources and prepare for the building or construction project

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to procure the physical and human resources necessary to ensure the development of on-site facilities and the availability of personnel, plant and equipment, materials and other site-essential items for low rise (low rise' licensing classification with reference to Class 1 and 10 construction and Classes 2 to 9 with a gross floor area not exceeding 2000 square metres, not including Type A or Type B construction) construction projects.

Knowledge of physical resource acquisition and supply processes, and identification and procurement of suitable labour through the organisation's own employees and/or subcontractors is essential.

Application of the Unit

Application of the unit

This unit of competency supports the needs of builders, site managers and forepersons, estimators and other building and construction industry professionals who have a responsibility to acquire the physical and human resources required for residential and commercial construction projects.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Notify client and relevant authorities and agencies of the schedule of works.	1.1. Fees due are paid and site handover date is confirmed with client. 1.2. Insurance and security requirements are established and provided. 1.3. Parking restrictions are determined and advised to relevant personnel. 1.4. ***Authorities*** requiring formal notification of the commencement of work are contacted.
2. Organise the delivery of on-site accommodation and facilities.	2.1. Requirements for on-site accommodation and facilities are identified. 2.2. Site office, storage sheds and on-site toilet facilities are arranged, received and positioned. 2.3. Site signage is erected to comply with regulations. 2.4. Processes are developed and implemented to identify and protect existing services at the site. 2.5. ***Council requirements*** are identified and met.
3. Organise the delivery of plant.	3.1. On-site ***plant*** delivery dates are confirmed. 3.2. Hoardings are erected and rubbish removal facilities are arranged.
4. Arrange the connection of temporary services.	4.1. Temporary power and water connections are arranged with service providers. 4.2. Temporary site access and egress are arranged and authorisations obtained from the local authority.
5. Organise on-site human resources.	5.1. On-site human resource requirements are identified. 5.2. Construction work supervisor is engaged or appointed. 5.3. Industrial relations and safety matters occurring on supervised work site that could impact on the resourcing and preparation for building work are addressed where required. 5.4. Appropriate personnel is engaged according to project needs.
6. Order materials.	6.1. Orders for prefabricated materials are placed using approved company documentation and site delivery dates are confirmed. 6.2. Construction arrangements required by contract are finalised to satisfy the project schedule.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- apply numeracy skills to workplace requirements
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - provide information to client, authorities and relevant on-site and off-site personnel by telephone, facsimile, email and in writing
  - read and interpret plans
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to complete workplace documentation
- coordinating a range of team members and activities
- effective management of a construction work site
- interpreting plans
- planning and scheduling construction work
- supervising site.

Required knowledge

Required knowledge for this unit is:

- contract documentation, quantities, rates and costs related to payments and claims
- differences in and uses of various building and construction industry contracts
- resource procurement processes
- safe working policy and procedures
- scope, operations and structures of the building and construction industry subcontractor system
- state or territory building and construction codes, standards and government regulations relevant to the form of building or construction being undertaken.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by identifying, planning and putting in place the essential infrastructure (including human, physical, plans and processes) required to commence and support a construction project.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- procure resources effectively
- communicate effectively, both verbally and in writing with suppliers and subcontractors
- complete documentation to organisational standards
- advise appropriate authorities and gain necessary approvals or responses.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- documentation that should normally be available in either a building or construction office
- relevant codes, standards and government regulations
- office equipment, including calculators,

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	photocopiers and telephone systems • computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies • a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature • a suitable work area appropriate to the construction process. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability

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	and applied knowledge • all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed. Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Authorities include:	• electricity authorities • environmental protection agencies • local government agencies • road traffic authorities • water authorities.
On-site accommodation and facilities include:	• caravans • dormitories • lunch rooms • office facilities • sheds • toilet facilities.
Council requirements include:	• consent matters • heritage protection • tree conservation.

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RANGE STATEMENT

Plant includes:	• air compressors • pile driving equipment • portable generators and lighting equipment • pumps • wheeled or tracked earthmoving equipment.
On-site human resource requirements include:	• administrative personnel • construction workers • cooks and kitchen hands • drivers and machine operators • supervisors and forepersons • tradespersons.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4018A Apply site surveys and set-out procedures to building and construction projects

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to conduct basic measuring and levelling techniques as part of the set-out procedures performed on building projects.

It includes the use of technical instruments, application of standard procedures and performance of calculations necessary in the set-out of construction projects.

Application of the Unit

Application of the unit

This unit of competency supports builders, site supervisors and related construction industry professionals responsible for ensuring accurate application of site surveys and set-out procedures prior to residential and commercial construction.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Perform setting out, measuring techniques and associated calculations.	1.1. Trigonometric and geometric calculations commonly used with grid lines, off sets and right angle triangles are calculated and recorded without error. 1.2. Site set-out procedures are carried out according to standard work methods on ***sites***. 1.3. Errors in measured distances due to site characteristics and measurement methods are identified and explained. 1.4. ***Cut and fill calculations*** are conducted without error.
2. Set up and use levelling devices.	2.1. Use of ***levelling device*** is demonstrated in accordance with standard operating procedures. 2.2. Error present in a level by the 'two peg test' device is demonstrated in accordance with standard operating procedures. 2.3. Reduction in a closed level run by rise and fall method and by height of plane of collimation (HPC) method is carried out in accordance with standard practices. 2.4. Calculation of staff readings to enable a specific reduced level (RL) set-out to be determined is calculated without error.
3. Mark out and determine levels on a grid for contouring and volume calculations.	3.1. Set out grid and levels are determined. 3.2. Contour plans are prepared from grid levels to specified tolerances and stated contour intervals. 3.3. Volume of solids and the surface being levelled and contoured are determined to specified tolerances.
4. Construct longitudinal sections and determine associated grades and levels in typical drainage and pipeline situations.	4.1. Longitudinal sections are drawn from reduced levels and running chainages. 4.2. Levels and clearances from given grades and distances are determined to specified tolerances. 4.3. Calculations and expressions of grades in ***three forms*** are determined to specified tolerances. 4.4. Calculations for batter levels from grades and distances are determined without error.

Required Skills and Knowledge

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- application of design concepts and principles relating to structural systems
- application of measurements and calculations
- attention to detail when transferring levels
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret plans
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- numeracy skills to apply measurements and calculations
- use of levelling devices for survey and site set outs.

Required knowledge

Required knowledge for this unit is:

- applications of structure in building systems and application to survey and site set-out
- BCA and Australian standards
- design principles
- level and grade checking used to perform survey control to accuracy criteria
- nature of survey and levelling devices and effect of performance on site
- work drawings and specifications.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed by the application of survey and site set-out procedures and principles of selection and use of two levelling devices to survey and set out building projects.

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EVIDENCE GUIDE

	This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with OHS and organisational quality procedures and process within the context of this unit of competency • apply and interpret relevant documentation and codes • accurately apply survey and levelling principles relating to performance of site set-out, including contouring, volume and grade calculations • identify typical faults and problems and necessary action taken to rectify such faults.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • documentation, including design brief drawings, specifications, codes, design concepts, construction schedules and other necessary supporting documents • research resources, including levelling device information and data • access to relevant legislation, regulations and codes of practice • relevant computer software package and suitable hardware where applicable to survey and set-out practices. Reasonable adjustments for people with

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	disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge • all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed. Supplementary evidence of competency may be

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	obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Sites include:	• low rise commercial construction • residential developments.
Cut and fill calculations include:	• area and volume of land to be levelled • area of land to be filled • use of appropriate software • volume of fill required.
Levelling devices include:	• electronic distance measuring (EDM) equipment • laser • optical plummets • theodolite.
Three forms relate to:	• angles • percentages • run ratios.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4019A Apply sustainable building design principles to water management systems

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to apply sound water management principles as part of the implementation of sustainable building and construction processes. The range of legislative and council planning requirements are addressed in addition to the need to respond to growing consumer demand for sustainable buildings and environmentally friendly developments.

Application of the Unit

Application of the unit

This unit of competency supports the needs of builders, site managers and forepersons, and estimators in the building and construction industry.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Apply legislative and planning requirements for effective water management systems to the building process.	1.1. Current relevant state, territory and council requirements for ***effective management of water systems*** are identified as part of the building and construction design process. 1.2. Client needs and expectations for the design and use of water management systems are identified and negotiated. 1.3. Expert plumbing and other advice is gathered as part of the planning process. 1.4. Relevant Australian standards are consulted to identify the implications for the conduct of the building project. 1.5. Environmental and resource efficiency issues are identified and addressed.
2. Identify and apply opportunities for improved water management.	2.1. Impact of client and resident behaviour on effective water management and use is identified. 2.2. Opportunities to select efficient water management ***fixtures and appliances*** as part of the building design are identified, evaluated and applied. 2.3. Relative installation and ongoing usage costs of efficient water management fixtures and appliances are quantified and communicated to the client. 2.4. Efficient water management fixtures and appliances are used as negotiated within the building project.
3. Apply sound water management principles to the site and its landscaping.	3.1. Soil and sediments are contained to the site as part of the site preparation and management. 3.2. Sound waste management practices are used on site. 3.3. Effective sediment control barriers are in place and used. 3.4. Topsoil and local rocks are stockpiled and retained for later use in landscaping. 3.5. Appropriate input is made to the landscape design process to optimise water use, reuse and recycling.
4. Promote best practice in water management.	4.1. Selection, location and installation of tanks to optimise the reuse of roof water are evaluated and implemented. 4.2. Costs, planning implications and construction techniques for the reuse of grey water are identified and implemented as negotiated with the client. 4.3. Costs and performance characteristics of various

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ELEMENT	PERFORMANCE CRITERIA
	materials used in the installation of water management systems are identified and negotiated with the client.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- application of Australian standards and codes and manufacturer specifications
- evaluation of alternative water management systems
- communication skills to:
  - communicate information to client
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - identify and negotiate client requirements
  - read and interpret legislative and planning requirements
  - seek advice
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
- numeracy skills to apply calculations
- work safely to OHS regulations and site requirements.

Required knowledge

Required knowledge for this unit is:

- building and construction industry contracts
- relevant state or territory building and construction codes, standards and government regulations
- workplace safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by the effective application of mechanical principles and concepts to design of a sustainable water management system.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- source and analyse legislative and planning requirements for water management in the building process
- calculate costs and savings of implementing alternative water management systems
- apply principles of effective water use, recycling and reuse to the planning of a building project
- produce work plans that reflect effective water management.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- documentation that should normally be available in either a building or construction office
- relevant codes, standards and government

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EVIDENCE GUIDE

	regulations • office equipment, including calculators, photocopiers and telephone systems • computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies • a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature • a suitable work area appropriate to the construction process. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with

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a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Effective management of water systems includes:

- grey water recycling
- roof water reuse.

Fixtures and appliances include:

- dishwashers
- showerheads (low flow and maxi flow)
- spas
- taps
- toilets
- washing machines.

Waste management practices include ensuring that:

- run-off from the cleaning up of equipment (e.g. painting) is handled appropriately
- waste bins are used and emptied appropriately.

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Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4020A Build thermally efficient and sustainable structures

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to apply sound principles of thermal efficiency as part of the implementation of sustainable building and construction processes. The range of legislative and council planning requirements are addressed in this unit, in addition to the need to respond to growing consumer demand for sustainable buildings and environmentally friendly developments.

Application of the Unit

Application of the unit

This unit of competency supports the needs of builders, site managers and forepersons, and estimators in the building and construction industry.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Apply legislative and planning requirements for thermal efficiency to the building process.	1.1. Current relevant state, territory and council ***requirements for building thermally efficient structures*** are identified. 1.2. Factors that contribute to the construction of a five-star rated dwelling identified within the Building Code of Australia (BCA) are identified and the impact of ***regional climate differences*** is assessed. 1.3. Client needs and expectations for the design and construction of thermally efficient structures are identified and negotiated. 1.4. Expert design and other advice is gathered as part of the planning and construction process. 1.5. Relevant Australian standards are consulted to identify the implications for the conduct of the building project.
2. Review design solutions for effectiveness and compliance.	2.1. Impact of radiation, convection, conduction and evaporation on the thermal comfort of residents is identified. 2.2. Orientation of the building, location and size of glazing, and use of thermal mass as design features are evaluated for effectiveness and compliance with planning and other regulatory requirements. 2.3. Effective strategy for insulating the structure is evaluated, costed and communicated to the client. 2.4. Building designs are assessed for their compliance with the energy efficiency requirements of the BCA's five-star rating system. 2.5. Designers and clients are consulted to ensure final construction plans are effective, efficient and compliant.
3. Manage the building process to ensure an effective outcome.	3.1. Effective communications are established between designers, architects and clients to ensure effective thermal performance is embedded from the design to construction phase. 3.2. Effective quality assurance processes are confirmed as in place to evaluate and implement the building of a five-star dwelling. 3.3. Cost effective strategies to achieve desired level of thermal performance are assessed and communicated to client. 3.4. Life cycle costs of various construction approaches

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ELEMENT	PERFORMANCE CRITERIA
	are assessed and negotiated with the client.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- application of Australian standards and manufacturer specifications
- application of BCA Part 3.12
- communication skills to:
  - communicate information to client
  - consult designers
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - identify and negotiate client requirements
  - read and interpret legislative and planning requirements
  - seek advice
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- evaluation of the thermal efficiency of building design solutions
- apply numeracy skills to workplace requirements.

Required knowledge

Required knowledge for this unit is:

- building and construction industry processes for building sustainability
- relevant state or territory building and construction codes, standards and government regulations
- underlying mathematics related to the calculation of thermal efficiency
- workplace safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed by the effective application of mechanical principles and concepts to construction of a thermally efficient and sustainable building structure. This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • source and analyse legislative and planning requirements for thermal efficiency in the building process • calculate costs and savings of implementing alternative thermally efficient systems • apply principles of thermal efficiency to planning of a building project • produce work plans that reflect effective thermal efficiency.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • documentation that should normally be available in either a building or construction office • relevant codes, standards and government regulations

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- office equipment, including calculators, photocopiers and telephone systems
- computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies
- a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature
- a suitable work area appropriate to the construction process.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete

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EVIDENCE GUIDE

confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Requirements for building thermally efficient structures include:

- appropriate use of thermal mass (noting impact of climatic conditions)
- glazing size and orientation
- insulation
- orientation of building
- use of relevant construction methods.

Regional climate differences and the impact on effective design solutions include areas with:

- cooling climates
- hot arid climates
- hot humid climates
- mixed climates.

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Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4021A Minimise waste on the building and construction site

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency specifies the outcomes required to support sustainable building practices by minimising waste on the building and construction site. The range of legislative and council planning requirements are addressed in addition to industry best practice in relation to the management of by-products generated and removed from demolition, renovation and construction sites.

Application of the Unit

Application of the unit	This unit of competency supports the needs of builders, site managers and forepersons, and estimators in the building and construction industry.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan a waste management strategy.	1.1. Current relevant state, territory and council requirements for managing and minimising building waste are identified.
	1.2. Relative costs and savings associated with ***strategies to minimise waste*** are calculated and negotiated with client.
	1.3. Effective communications are established with the architect, designer, engineer and other relevant professionals to ensure project plans incorporate waste minimisation strategies.
	1.4. Relevant Australian standards are consulted to identify the implications of waste minimisation strategies for the conduct of the building project.
	1.5. Waste management strategy to support the building and construction project is developed.
2. Manage materials procurement to minimise waste.	2.1. Building and construction materials are evaluated to identify high quality and more durable materials that will extend the life of the structure and simplify its future extension and refurbishment.
	2.2. Recycled materials are used where appropriate and with regard to regulatory and standards' restrictions.
	2.3. Procurement specifications are developed that seek to minimise ***packaging waste***.
3. Manage the building process to reduce waste.	3.1. Demolition practices are determined and used to increase the recovery of materials for recycling and reuse.
	3.2. Strategies are adopted to minimise the volume of site excavation and other materials that are disposed of in landfill.
	3.3. Litter abatement strategies are adopted on site.
	3.4. Safe and environmentally effective disposal of unavoidable waste is planned and implemented.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

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REQUIRED SKILLS AND KNOWLEDGE

Required skills

Required skills for this unit are:

- application of Australian standards and manufacturer specifications
- application of the Building Code of Australia (BCA)
- communication skills to:
  - communicate information to client
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - identify and negotiate client requirements
  - seek advice
  - read and interpret:
    - legislative and planning requirements
    - relevant Australian standards
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to produce a waste management strategy
- numeracy skills to apply calculations
- problem solving to determine optimum waste minimisation practices.

Required knowledge

Required knowledge for this unit is:

- building and construction industry processes for building sustainability
- relevant state or territory building and construction codes, standards and government regulations
- workplace safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed by the effective application of sustainable waste management principles and concepts on a construction work site. This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • source and analyse legislative and planning requirements for waste minimisation in the building process • calculate costs and savings of implementing alternative waste minimisation systems • produce a strategy or plan for effective waste minimisation.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • documentation that should normally be available in either a building or construction office • relevant codes, standards and government regulations • office equipment, including calculators, photocopiers and telephone systems

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EVIDENCE GUIDE

- computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies
- a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature
- a suitable work area appropriate to the construction process.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

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- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Strategies to minimise waste include:

- procurement policies that encourage use of recyclable and recycled material
- building to standard sizes
- contracts with subcontractors that require implementation of waste minimisation
- materials salvage and recycling
- litter abatement
- use of reusable delivery and storage containers.

Packaging waste reduction methods include the use of:

- metal strapping in place of shrink wrapping
- paper packaging in place of plastic
- shredded paper packing in place of foam
- recyclable or reusable containers.

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Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4022A Supervise tilt-up work

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to organise, coordinate and supervise tilt-up work on site. The knowledge and skills required to apply licensing and other regulatory requirements to the process are addressed. The erection of tilt-up pre-cast concrete panels requires the application of highly structured processes and the application of safe work practices.

Application of the Unit

Application of the unit

This unit of competency supports the needs of site supervisors and builders with a responsibility for supervising tilt-up work on site. It complies with the National Code of Practice for Precast, Tilt-up and Concrete Elements in Building Construction

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Provide effective administration.	1.1. ***Licences and approvals*** required for tilt-up work are checked or obtained, work plan is prepared, and relevant regulatory authorities are notified of work if necessary. 1.2. Copies of all structural and design documents, pre-cast panel shop drawings, layout plans and other documents are obtained, stored on site and accessed as required. 1.3. Details of persons assigned to perform tilt-up work are checked to ensure relevant competency licences are held and ***regulatory training requirements*** have been met.
2. Plan and set up site.	2.1. Site security, amenities, services and ***emergency/first aid*** facilities are provided and associated site procedures are prepared. 2.2. Requirements for footings, structural elements, concrete slabs and site access roads for the tilt-up work are reviewed and made available. 2.3. Concrete panel casting and delivery sequence are planned to support the work sequence and taking into account the required curing times for the concrete panels. 2.4. Traffic management and public safety plans and procedures are developed and exclusion zones planned for concrete panel delivery, casting and erection operations. 2.5. Ground conditions such as soakwells and drains likely to affect crane stability are identified, crane standing areas are checked for strength and compaction, crane suppliers are consulted and suitable crane operating locations are identified and recorded. 2.6. A site specific ***OHS management plan*** is prepared and implemented, work plan is implemented, and ***OHS risk control measures*** are applied.
3. Organise and coordinate tilt-up work.	3.1. Delivery sequence is coordinated for concrete panels cast off site, or a casting and curing schedule and distribution of panels on site are coordinated. 3.2. Process is put in place to ensure concrete panels are placed and stored in accordance with engineer's requirements. 3.3. Concrete panel inspection records are checked to

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ELEMENT	PERFORMANCE CRITERIA
	confirm design specifications have been followed during panel fabrication and manufacture.
	3.4. Process is put in place to ensure erection areas are cleared, exclusion zones set up, barriers erected and site personnel advised of restricted access areas prior to erection of concrete panels.
	3.5. Process is put in place to ensure fixings and anchor bolts supplied for temporary bracing are checked for compliance with designer and engineer specifications.
	3.6. Process is put in place to ensure correct type of braces are fixed to panels prior to lifting, and locating dowels and shims are correctly placed and components positioned and propped in accordance with shop drawings or as approved by the engineer.
	3.7. Supervision of ***safe work method statements***, safe systems of work and safe work practices, drawings, specifications and engineering details is undertaken to ensure the required procedures are followed by workers and contractors during the erection of the concrete panels.
	3.8. In the event of unanticipated circumstances, job safety analysis and other tools are used to identify hazards, assess risks and create safe systems
4. Confirm tilt-up stabilisation.	4.1. Erected concrete panels are checked for compliance with design and engineering specifications.
	4.2. Structural steel elements being fixed to the temporarily braced panels are checked to ensure that they are in accordance with designed engineering specifications.
	4.3. Process is put in place to ensure the erected structure is inspected by an engineer and certified as being sound prior to the removal of temporary bracing from concrete panels in line with the relevant state or territory regulatory requirements.
	4.4. Process is put in place to ensure braces are removed methodically, with temporary bracing and other erection elements stacked and removed from site.
	4.5. On completion of the erection work, processes are put in place to ensure the work areas are cleared before other trades are permitted to enter exclusion zones.
	4.6. Work completion procedures are applied, relevant personnel are notified of work completion and site

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ELEMENT	PERFORMANCE CRITERIA
	records are maintained to company requirements.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - ensure safe systems of work and safe work practices are followed
  - facilitate discussion of workplace hazards and risks
  - read, interpret and apply information from:
    - design specifications
    - legislative requirements
    - plans
    - procedures
    - tilt-up guidance material
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to complete:
    - memos
    - safe work and OHS management plans
    - safe work method statements
    - schedules
    - site records
- numeracy skills to check and calculate dimensions and levels.

Required knowledge

Required knowledge for this unit is:

- National Standard for Construction Work and National Code of Practice for Induction for Construction Work
- capacity and limitations of plant, lifting gear and equipment used in tilt-up work, including associated safe systems of work

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REQUIRED SKILLS AND KNOWLEDGE

- capacity and limitations of rigging and equipment, including use of load charts
- grouting, bracing, torquing, stabilisation and fixing work practices
- hazard identification and the formulation of safe work method statements and safe systems of work, which include those for safe work at height (fall arrest equipment and scaffolding and access equipment)
- interpretation of plans, drawings and specifications for tilt-up work
- National Code of Practice for Precast, Tilt-up and Concrete Elements in Building Construction, OHS regulations, and Australian standard 3850 Tilt-up concrete construction, as related to the supervision of tilt-up work.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by demonstration of the successful supervision of a tilt-up construction project.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is demonstrated in the relevant aspects supervising the erection of one multi point pre-cast tilt slab or one cast in situ tilt slab, each of at least 10 tonne.

Competence requires full compliance with the National Standard for Construction Work and National Code of Practice for Induction for Construction Work. Competence also needs to demonstrate a familiarity with and understanding of tilt-up construction codes of practice, standards, regulations and approval gaining processes, and their application.

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- access and apply legislative requirements
- identify OHS hazards and assess and control OHS risks associated with the tilt-up construction process
- prepare the site OHS management plan
- plan, prepare and carry out the tilt-up construction process and implement state or territory legislative requirements and guidance material
- identify potential hazards and interpret and apply information from plans, specifications, drawings and procedures.

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Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • documentation that should normally be available in either a building or construction office • relevant codes, standards and government regulations • office equipment, including calculators, photocopiers and telephone systems • computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies • a technical reference library with current publications on measurement, design, building construction and manufacturer's product literature • a suitable work area appropriate to the construction process. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles

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- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

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RANGE STATEMENT

Licences and approvals include:	• building licences • notification and approval, which may be required under OHS legislation for tilt-up work.
Regulatory training requirements refer to:	• induction and training, which may be required under state or territory OHS legislation for tilt-up work • induction and training in accordance with the National Standard for Construction Work and National Code of Practice for Induction for Construction Work.
Emergency/first aid includes:	• emergency shutdown and stopping • extinguishing fires • OHS first aid, emergency and evacuation requirements.
OHS management plan refers to:	• requirements of the National Standard for Construction Work.
OHS risk control measures refer to:	• control measures required by different site and soil conditions • control measures required by other site conditions, such as working with surrounding structures, restricted site access conditions, traffic control issues and working in proximity to others, including work site visitors and the public • those in accordance with OHS standards, regulations and codes of practice • trip hazards, noise, working with dangerous materials, manual handling, working in confined spaces, working at height, and electrical hazards such as overhead cables and conduits.
Safe work method statements refer to:	• requirements of the National Standard for Construction Work.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4024A Resolve business disputes

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to advise on or resolve business disputes that may arise in the course of activities in residential and commercial contracting projects. Dispute resolution procedures may be applied as one of the disputing parties or as an independent party.

Application of the Unit

Application of the unit

This unit of competency supports the needs of builders, site managers and forepersons, estimators, managers and other construction industry personnel responsible for ensuring that business disputes are resolved in a positive manner.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop and implement dispute resolution procedures.	1.1. Established business ***dispute resolution procedures*** are reviewed and implemented as appropriate. 1.2. Business dispute resolution procedures are developed where required and documented, and agreement to procedures is secured from all parties. 1.3. Recording procedures are established and provision for record keeping is made. 1.4. External arbitrators or conciliators are identified for consultation when disputes cannot be resolved internally.
2. Conduct an initial investigation into business disputes and possible resolution strategies.	2.1. Nature and ***cause of business disputes*** are identified and documented. 2.2. Parties to dispute are identified and approached individually, and the issues are clarified and documented. 2.3. Solutions based on an examination of the information collected and with reference to contractual arrangements are suggested.
3. Identify opportunities for dispute resolution.	3.1. Efforts are made to bring the disputing parties together. 3.2. Where necessary, external arbiters or conciliators are consulted. 3.3. Relevant statutory laws are identified, applied and followed. 3.4. Disputes are resolved in accordance with common law.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - communicate by telephone

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REQUIRED SKILLS AND KNOWLEDGE

- enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
- research and evaluate information and circumstances surrounding a business dispute
- read and interpret relevant legislation
- use and interpret non-verbal communication
- use language and concepts appropriate to cultural differences
- written skills to:
  - complete checklists
  - send emails and faxes
  - write memos and reports
- negotiation relevant to dispute resolution situations
- problem solving in the context of dispute resolution
- research and evaluate information and circumstances surrounding a business dispute.

Required knowledge

Required knowledge for this unit is:

- contractual and business frameworks underpinning the building and construction industry
- mores, values and attitudes of various groups in the community that should be accounted for in discussions
- possible reactions from persons under pressure, such as anger and withdrawal.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by developing a set of dispute resolution procedures and demonstrating how these would apply to a selection of disputes.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- identify the nature of the dispute and the identity of the parties to the dispute
- document the details of the dispute in sufficient terms for an unambiguous evaluation of the issues to occur
- identify and follow established dispute resolution procedures
- develop and implement dispute resolution procedures, where there are none established.
- understand need to remain completely impartial in any involvement in a dispute.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- documentation that should normally be available in either a building, construction or civil contracting office

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- relevant codes, standards and government regulations
- suitable work area appropriate to the construction process.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

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Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Dispute resolution procedures include:

- arbitrated decisions
- common law outcomes
- litigated decisions
- mutual resolution
- on-site negotiations
- reference to contractual obligations.

Cause of business disputes includes:

- contract payment issues
- different opinions about design, structural layout or dimensions
- dissatisfaction with project progress
- structural finish, quality, materials or construction methodology.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4025A Manage personal work priorities and professional development

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency specifies the outcomes required to present confidently, prepare for personal responsibilities in the workplace and provide opportunities for personal professional development.

Application of the Unit

Application of the unit	This unit of competency supports the needs of builders, site managers and forepersons, estimators, managers and other residential and commercial construction industry personnel.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Manage own work performance.	1.1. ***Personal qualities*** appropriate to the construction workplace environment and culture are known and demonstrated. 1.2. Organisational strategies and priorities linked to personal responsibilities and accountability are reflected in personal performance plans. 1.3. Stable work performance is maintained consistently and under pressure situations. 1.4. Difficult workplace situations are recognised, addressed promptly and sensitively, and concluded positively. 1.5. Work performance and presentation requirements are established and met.
2. Set and meet own work priorities.	2.1. Competing demands for work time and priority action are assessed and organised to achieve individual, team and organisational ***work priorities***. 2.2. Activities are managed effectively to accomplish personal, team and organisational goals and objectives. 2.3. Technology is used where appropriate to improve efficiency and effectiveness in managing work priorities and commitments.
3. Develop and maintain professional competence.	3.1. Personal strengths and weaknesses are assessed against job requirements to determine personal development priorities and action where necessary. 3.2. Feedback on performance is regularly sought and used to improve professional development. 3.3. Management skills relevant to the job role are identified and developed to enhance performance. 3.4. Participation in professional networks and associations is used to enhance knowledge, skills and relationships.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

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REQUIRED SKILLS AND KNOWLEDGE

Required skills

Required skills for this unit are:

- adherence to organisational ethical and probity standards
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - communicate by telephone
  - participate in workplace conversations and meetings
  - read and interpret documentation from a variety of sources
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to:
    - complete checklists
    - produce memos and reports
    - send emails and faxes
- managing conflict and change in construction work situations
- numeracy skills to apply calculations
- recognising and managing workplace improvement opportunities
- teamwork skills to:
  - relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
  - work with others to coordinate and action tasks.

Required knowledge

Required knowledge for this unit is:

- mores and values of the workplace
- professional network and associations within the industry
- relevant local codes, standards and regulations applicable to the building and construction industry
- technologies applicable to and found within the workplace
- workplace safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by the preparation of a personal work and development plan.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- recognise and apply personal motivation and commitment to the work role
- manage day to day responsibilities and conflicting demands in an efficient and cooperative manner
- relate positively to clients, fellow workers and the management team
- assess personal strengths and weaknesses and plan and implement appropriate personal development.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- documentation that should normally be available in a building or construction office
- relevant codes, standards and government regulations
- a suitable work area appropriate to the

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EVIDENCE GUIDE

	construction process. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge • all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in

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relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Personal qualities include:

- appropriate personal presentation for the job role
- confidence
- fairness
- integrity
- patience
- perseverance
- probity
- timeliness and punctuality.

Work priorities include:

- dealing with conflicting goals
- determining work and personal needs
- individual and team goals and targets
- planning new work
- prioritising and scheduling
- reassessing performance
- work in progress.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4026A Arrange building applications and approvals

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to prepare documentation and submit a building approval application or submission to appropriate authorities and the management of the submission through to its final approval.

To successfully manage building approvals requires a detailed understanding of the technical documentation that must be prepared, including building plans and specifications together with knowledge of the current regulatory and planning processes. The unit requires the ability to communicate effectively with related building professionals, planning officers and clients.

Application of the Unit

Application of the unit

This unit of competency supports builders, project managers and related construction industry professionals responsible for coordinating and managing the building approval process. The unit has application to residential and commercial building projects. Although the building approval process is highly structured, there is a significant degree of variability between building approval submissions, which requires problem solving and effective communications to achieve the required outcomes.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan the process for lodging approval applications.	1.1. ***Approvals*** required for each project stage are identified. 1.2. Level and type of ***information and documentation*** needed for the application are determined and confirmed, where appropriate, in consultation with ***external specialists***. 1.3. Plan is developed and submitted for approval, recognising scheduling requirements and client needs. 1.4. External specialists are consulted, as required, to facilitate certification of documents.
2. Prepare and lodge applications for approval.	2.1. Necessary documentation and supporting information are prepared and checked for compliance with the requirements of the building approval authority. 2.2. Impact of planning application on range of ***stakeholders*** is analysed and strategies are adopted to maximise the likelihood of their support for the application. 2.3. Necessary documentation and supporting information are lodged with approval authority. 2.4. Confirmation of application status is sought at appropriate intervals to ensure continuing progress.
3. Evaluate and review outcome of application.	3.1. Outcome of building approval application is assessed to determine impact on project. 3.2. Where required, minor amendments are negotiated in accordance with client, organisation and approval authority requirements. 3.3. Rejected submissions are analysed to determine likely success of an appeal or a resubmission, and course of action is determined with the client.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

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REQUIRED SKILLS AND KNOWLEDGE

Required skills for this unit are:

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - liaise with clients, stakeholders, specialists and approval authorities
  - negotiate amendments
  - read and interpret:
    - codes of practice
    - plans, specifications and drawings
    - regulations
    - reports
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to prepare planning submission.

Required knowledge

Required knowledge for this unit is:

- building approval processes
- documentation requirements of building approval submissions
- organisation document control processes
- organisation policy relevant to building approval submissions
- industry code of practice
- range of planning approval types
- relevant Australian standards
- specialist services for certification of documentation.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by the preparation, submission and management of a building approval.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- submit planning documents in a logical, accurate and complete manner
- demonstrate sound document control processes
- apply relevant Australian standards
- manage a range of approval types, for example fire safety compliance, sustainability or other approvals that may be required by the local authority
- interpret building approval requirements and processes.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- documentation, including client briefs, designing concepts, construction schedules and necessary supporting documentation
- client file and information for review.

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EVIDENCE GUIDE

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

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	Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Approvals include:	• building approval applications for:
	  • full approval
	  • staged approval
	• development applications
	• sustainability requirements
	• fees and levies.

Information and documentation include:	• design briefs • specialist's reports • working drawings, plans and specifications.
External specialists include:	• building surveyors, quantity surveyors and site surveyors • geotechnical and environmental specialists • structural, mechanical and electrical engineers.
Stakeholders include:	• clients • employees/staff • existing tenants • finance providers • interest groups • local community • neighbours.

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Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4027B Establish a basis for sales consulting

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to develop information about the sales process. The unit covers the construction industry and establishing personal standards in support of the sales process.

Application of the Unit

Application of the unit This unit of competency supports the needs of sales consultants and other professionals within the building and construction industry responsible for the marketing and sale of newly constructed residential and commercial structures.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop knowledge of the industry.	1.1. Industry building types are identified. 1.2. Knowledge of styles within industry sectors is developed, including individual design, project and architectural designs, renovations and additions. 1.3. ***Market segments*** within the relevant industry sector are identified. 1.4. Knowledge of the industry is used to provide customers with clear and accurate information as required.
2. Demonstrate the key attributes of an industry sales consultant.	2.1. Gestures, posture, body language, facial expression and voice are used to create a supportive selling environment. 2.2. Customer needs are accurately determined through the use of open-ended questions and active listening. 2.3. Persuasive communication techniques are used to secure buyer interest. 2.4. Product benefits are established and explained to enhance buyer retention. 2.5. ***Proof of benefits*** are obtained and presented through product purchase process. 2.6. ***Sales aids*** are used to build buyer understanding of how the product is aligned with needs.
3. Manage self-development and personal performance.	3.1. ***Self-development*** plan is produced, which reflects individual and company goals and targets. 3.2. ***Personal performance*** is reviewed, evaluated and modified, as required. 3.3. Processes are put in place to maintain personal mental and physical well being.
4. Manage buyer resistance and complete documentation.	4.1. Probing is used to identify ***source of buyer resistance***. 4.2. Strengths and limitations of strategies to overcome buyer resistance are identified. 4.3. Strategy for managing buyer resistance is selected and implemented ensuring it addresses the source of buyer resistance. 4.4. Customer and sales information is recorded as required.
5. Develop and maintain professional competence.	5.1. Ongoing training and development that meet requirements for professional development programs are identified and attended.

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ELEMENT	PERFORMANCE CRITERIA
	5.2. Participation in professional networks and associations is used to enhance knowledge, skills and relationships.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to convey information factually and accurately without overpowering the client
- ability to identify and source the latest industry information
- adhere to organisational ethical and probity standards
- apply numeracy skills to workplace requirements
- communication skills to:
  - demonstrate and communicate property benefits to customers, including long-term benefits of sustainable building solutions and other unique selling features
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret product information and relevant industry information and documentation from a variety of sources
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to record client and sales information
- conflict resolution skills to manage customer dissatisfaction
- negotiation skills to manage buyer resistance
- research skills to use sales statistics to support a verbal argument
- teamwork skills to:
  - relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
  - work with others to coordinate and action tasks
- technological skills to use equipment to aid presentation of sales information and to operate a range of office equipment
- using persuasive and assertive language to promote product features and benefits.

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REQUIRED SKILLS AND KNOWLEDGE

Required knowledge

Required knowledge for this unit is:

- customer types and needs, including:
  - customer behaviour and cues
  - customer buying motives
  - individual and cultural differences, demographics, lifestyle and income
- detailed product knowledge, including industry intelligence and market analysis
- identification and overview knowledge of key provisions of relevant legislation from all levels of government that affect business operations, codes of practice and national standards, such as:
  - anti-discrimination
  - consumer protection
  - contract law
  - ethical principles
  - privacy laws
  - Trade Practices Act
- materials and aids that can be used to support the sales process
- sales strategies and sales targets and how to achieve them
- statistical methods to demonstrate sales performance
- types of customer needs, e.g. functional and psychological.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by preparing and submitting a self-development plan and a marketing plan for the sale of a structure.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- understand the role of a sales consultant
- identify characteristics of the sectors of the construction industry and range of products available in each sector
- demonstrate key attributes of a sales consultant, including personal presentation, oral communication skills and mannerisms that support client contact and instil confidence
- understand importance of adherence to organisational ethical and probity standards
- manage personal professional development and performance in line with organisational expectations.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- documentation that should normally be

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EVIDENCE GUIDE

	available in either a building or construction office • relevant codes, standard and regulations • office equipment, including calculators, photocopiers and telephone systems • a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature • a suitable work area • promotional materials and relevant information on marketing, market segments and sales strategies. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and

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separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Industry building types include:

- double brick, brick veneer, rammed earth and steel frame construction residences
- single and multiple storey buildings
- timber and/or fibro-cement construction.

Market segments include:

- first and subsequent home buyers
- speculative and investment buyers.

Proof of benefits includes:

- anecdotes and examples
- comparisons
- statistics
- testimony.

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RANGE STATEMENT

Sales aids include:	• drawings • electronic media • graphs • models • photographs • printed materials • product itself • transparencies • whiteboards.
Self-development includes:	• maintaining financial and lender knowledge • maintaining product and construction knowledge • membership of professional associations • professional development relating to sales and industry skills • undertaking appropriate training courses.
Personal performance includes:	• commitment to achieving sales targets • commitment to organisation's goals and objectives • level of achievement • mannerisms and demeanour • oral communication skills • presentation skills.
Source of buyer resistance includes:	• company resistance • price resistance • salesperson resistance • service dissatisfaction • timing issues • uncertainty about the product.
Strategies to overcome buyer resistance include:	• assertive messages • boomerang technique • checking perceptions • direct denial • incentives offer • indirect denial • open and closed questions • requesting additional information from buyers • superior benefit.

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Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4028A Prepare design brief for construction works

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency specifies the outcomes required to generate a brief for a conventional design, seek feedback on drafts, negotiate with the client and prepare a final design brief for client approval.

Application of the Unit

Application of the unit	This unit of competency supports the needs of builders, site managers, estimators, forepersons and other construction industry personnel responsible for preparing design briefs from client requests for residential and commercial projects.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Confirm client requirements.	1.1. Client requirements are clarified and confirmed through discussion with client and team member, if appropriate. 1.2. Financial expectations of the client are reconfirmed. 1.3. Preliminary design notions are discussed with team members to ensure consistency with client's vision.
2. Clarify stakeholder requirements.	2.1. Input from ***stakeholders*** is assessed to confirm the responsibilities, requirements and limitations of the design brief. 2.2. Analysis of site survey is commissioned, as appropriate, and all relevant information is gathered and used to inform development of the brief.
3. Negotiate engagement with the client.	3.1. ***Fee proposal*** is discussed with the client and amended as appropriate prior to formalisation of the agreement. 3.2. Scope of services to be undertaken within the contract is discussed and confirmed with the client, either directly or by delegation to a team member. 3.3. Draft proposals are presented to the client, and client feedback is used to modify and improve the proposal. 3.4. Design brief is finalised in compliance with stakeholder requirements and all documentation is completed to the client's satisfaction.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - clarify stakeholder requirements

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REQUIRED SKILLS AND KNOWLEDGE

- confirm client requirements
- negotiate engagement
- read and interpret:
  - design briefs
  - drawings and plans
  - sketches
- use and interpret non-verbal communication
- use language and concepts appropriate to cultural differences
- work with a team
- written skills to:
  - complete relevant workplace documentation
  - develop a design brief
- numeracy skills to apply calculations and to budget and forecast
- risk analysis and management for construction projects.

Required knowledge

Required knowledge for this unit is:

- fee structures
- industry codes of practice
- relevant statutory requirements applying to building work
- scope of services provided by the organisation.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by the effective preparation of a design brief applicable to construction project work.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- understand financial, legal and administrative factors affecting the contractual relationship
- communicate with clients effectively
- apply and interpret relevant statutory requirements
- analyse and commission a client design brief that complies with the requirements of all relevant stakeholders.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- documentation, including correspondence relevant to the assessment
- relevant management information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to

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	modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge • all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed. Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing

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	supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Stakeholders include:	• architects and designers • construction managers and site supervisors • federal, state or local authorities • principals of the building and construction company or other relevant senior personnel • regulatory bodies • services authorities • subcontractors.
Fee proposals require consideration of:	• client profile and relationship to the building and construction company • cost-benefit analysis • financing options.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCBC4029B Apply construction information to the sales process

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to apply construction information to the sales process in order to develop the customer's knowledge of construction processes and the effects on contract and building timelines. Effective communication with the client and provision of accurate information that contributes to a positive relationship between the client and the organisation are essential to performance.

Application of the Unit

Application of the unit

This unit of competency supports the needs of sales consultants and other professionals within the building and construction industry responsible for the marketing and sale of new residential and commercial constructions.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify approvals required before starting construction.	1.1. Statutory ***approvals***, in accordance with contractual or legal requirements, are identified and explained to the customer. 1.2. ***Insurance cover***, required in accordance with legal or contractual requirements, is identified and explained to the customer.
2. Identify the sequence of construction.	2.1. Main trade components of construction are identified and explained to the customer. 2.2. Construction process sequence is identified and explained to the customer. 2.3. Approximate duration of the main stages of construction are identified and explained to the customer. 2.4. ***Industry conditions*** that affect construction times are identified and explained to the customer.
3. Identify requirements for establishing a site before starting construction.	3.1. ***Site establishment requirements***, in accordance with legal requirements and company policy, are identified and explained to the customer. 3.2. Arrangements for access to site are established with client.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - provide information to the customer, including long-term benefits of sustainable building solutions and other unique selling features
  - respond to client questions about the building construction process
  - read and interpret relevant construction information
  - use and interpret non-verbal communication

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REQUIRED SKILLS AND KNOWLEDGE

- use language and concepts appropriate to cultural differences
- numeracy skills to estimate approximate construction timeframes based on the specifications of the building and site details.

Required knowledge

Required knowledge for this unit is:

- approvals that must be obtained prior to commencement
- building construction process and sequence of events
- site establishment requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by determining the approvals and insurances required for a construction project, and the requirements for establishing the site and the sequence of the construction.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- identify and explain nature of the approvals that need to be obtained before the contract proceeds
- ensure that right information is passed on to client at right time
- provide information that is accurate and easily understandable without unnecessary jargon
- use information effectively in communicating with clients
- explain circumstances that can contribute to delays in building progress and impact of those delays.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- documentation that should normally be

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EVIDENCE GUIDE

	available in either a building or construction office • relevant codes, standards and government regulations • office equipment, including calculators, photocopiers and telephone systems • computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies • a technical reference library with current publications on measurement, design, building construction and manufacturer's product literature • a suitable work area appropriate to the sales process. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected

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must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Approvals include:

- building license approvals
- electricity supply permits
- Health Department effluent disposal approvals
- Local Government Act building provisions approvals
- water service and sewerage connection approvals.

Insurance cover includes:

- builder's all risk
- indemnity

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RANGE STATEMENT

Industry conditions include:	• public liability • workers' compensation. • availability of labour and materials • provisions for inclement weather • subcontracting structure.
Site establishment requirements include:	• access and egress • drainage • earthworks • electricity supply • protection for adjoining owners • rubbish and waste disposal • signage • site facilities • water connection.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4030A Analyse and communicate industry information

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to analyse and communicate information about the industry environment and opportunities. This unit extends the information base for the sales process and furthers the ability of the salesperson to sell the industry and its products to the community.

Application of the Unit

Application of the unit

This unit of competency supports the needs of sales consultants and other professionals within the building and construction industry responsible for the marketing and sale of new residential or commercial constructions.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Review external and internal industry operating environments.	1.1. Factors forming ***external operating environment*** are identified. 1.2. ***Economic factors*** impacting on the housing industry are understood and taken into account. 1.3. Knowledge of the availability of land, characteristics of new subdivisions and geographic location is demonstrated. 1.4. Impact of ***social factors*** affecting the industry are understood and taken into account. 1.5. Personal perceptions of potential clients are recognised and noted. 1.6. ***Capacity to meet requirements of the client***, of the industry and the building and construction company, are understood and factored into communications with the client.
2. Identify and evaluate competition to building and investment.	2.1. Factors that provide ***competition*** for finance are understood. 2.2. ***Other markets*** which compete for investments are identified and their strengths and weaknesses analysed and understood.
3. Identify and communicate the benefits of the industry's operating structure.	3.1. Benefits of the industry's subcontracting system are explained to clients. 3.2. Competitive nature of the industry marketplace is identified as a strength benefiting the client. 3.3. Alternative opportunities in speculative and project construction are explained to the customer. 3.4. Company operating structures and industry productivity information are used effectively to attract customers.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

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REQUIRED SKILLS AND KNOWLEDGE

- apply numeracy skills to workplace requirements
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - provide information to clients
  - identify client requirements
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- listening and questioning skills to avoid misinterpretation of client requirements.

Required knowledge

Required knowledge for this unit is:

- economic circumstances and seasonal factors that influence the volume of housing sales
- effect of body language and personal appearance on client attitudes and behaviour
- industry, including market segments and product range
- purchasing patterns and other socioeconomic data
- types of potential customers and the factors which stimulate their decision to purchase a new dwelling.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by the preparation and submission of a current market analysis for the local region, outlining the external operating environment, competition and local opportunities.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- demonstrate understanding of external operating environment, economic and social factors and associated issues, such as land availability, which relate to housing sales
- understand internal factors which can affect construction planning
- sell benefits of housing construction to clients as a form of investment
- understand importance of adhering to organisational ethics and probity standards
- provide detailed information to clients effectively and efficiently.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- documentation that should normally be

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EVIDENCE GUIDE

available in either a building or construction office
- relevant codes, standards and government regulations
- office equipment, including calculators, photocopiers and telephone systems
- a technical reference library with current publications on measurement, design, building construction and manufacturer's product literature
- a suitable work area appropriate to the construction process.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with

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EVIDENCE GUIDE

a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

External operating environment includes characteristics of the marketplace which exert an influence on people's individual decisions whether to invest in a building may be abstract or direct factors, such as:

- interest rate movements
- perceptions about the investment value of the completed property
- perceptions about the resale value of the property
- perceptions about the value of the currency and possible movements
- speculative ambitions.

Economic factors include:

- availability of finance
- current interest rates
- level of economic activity.

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RANGE STATEMENT

Social factors include:	• business confidence • job security or insecurity • level of socioeconomic activity • migration.
Personal perceptions of potential clients include:	• perceptions about the investment value of the completed property • perceptions about the resale value of the property • perceptions about the value of the currency and possible movements • perceptions of potential interest rate movements • speculative ambitions.
Capacity to meet requirements of the client may be influenced by:	• availability of labour and materials • current financial situation • current order levels • projects already committed.
Competition includes effects of investments in:	• antiques • art • rental properties • share market.
Other markets include:	• apartments • duplexes and triplexes • existing real estate properties • high rise apartments • high rise construction • holiday homes and resorts • mobile homes • retirement villages • terrace housing.

Unit Sector(s)

Unit sector Construction

Co-requisite units

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Co-requisite units Nil

Functional area

Functional area

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CPCCBC4031A Process client requirements

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to process client requirements in relation to contract documentation, including drawings and specifications appropriate to residential and commercial construction projects. Knowledge of the construction planning process and the ability to obtain client information, accurately convey that information to those developing the contract documentation and complete the administration of the contract documentation process is essential.

Application of the Unit

Application of the unit

This unit of competency supports the needs of sales consultants, site managers, forepersons, estimators and other professionals within the building and construction industry responsible for processing client requirements.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and communicate the design requirements.	1.1. Client's design requirements are identified and documented. 1.2. Client's needs are met by providing correct technical or product knowledge. 1.3. Restrictive covenants are identified and communicated to the client. 1.4. Planning requirements are identified and applied. 1.5. Documentation and design risks, including copyright issues, are identified and addressed.
2. Interpret reports on site costs.	2.1. Site investigation is arranged to determine site features and costs. 2.2. Site costs are communicated accurately to the client. 2.3. Client's understanding of extent and cost of required ***site works*** is confirmed.
3. Arrange and oversee preparation of sketch plans.	3.1. Requirements for sketch plans and drawings are accurately communicated to drafting personnel. 3.2. Plans are forwarded to the client for approval or amendment. 3.3. Costing and variation requests are forwarded that accurately communicate client requirements.
4. Finalise contract requirements.	4.1. All sketch plans, specifications and costing documents are discussed with client. 4.2. All documents sighted by client are signed, with details initialled.
5. Prepare preliminary contract and plan agreement.	5.1. Preliminary ***contract*** /plan agreement is prepared and completed according to organisational policy. 5.2. Documents are submitted to the relevant department or personnel for checking and recording.
6. Oversee the contract and contract construction documents.	6.1. ***Contract documents*** are prepared according to instructions. 6.2. Construction documents are prepared according to preliminary contract/plan agreement details.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to communicate by telephone, facsimile, email and in writing
- apply numeracy skills to workplace requirements
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - communicate requirements to drafting personnel
  - confirm understanding
  - obtain information from, and provide information to, clients
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to produce contract documentation and other relevant workplace documentation
- personnel and resource management skills to achieve development or project objectives.

Required knowledge

Required knowledge for this unit is:

- building and construction industry contracts
- building and construction industry planning processes
- financial and business principles related to dealing with clients
- regulatory authority approval processes for the area in which project is to be undertaken
- state or territory building and construction codes, standards and government regulations.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment This unit of competency could be assessed by preparing contract documentation, drawings and

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EVIDENCE GUIDE

	specifications for a construction project that complies with client requirements. This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • obtain accurate and detailed information concerning client needs • select right type of contract for the particular project • process contract and all other relevant documentation correctly • select appropriate clauses and conditions to apply within the contract • administrate contract to standard required by the organisation and within any legal or regulatory requirements that may exist in the state or territory in which work is being done • obtain confirmation, by initial and signature, of client acceptance of project documentation and plan agreement or preliminary contracts.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • documentation that should normally be available in either a building or construction office • relevant codes, standards and regulations • office equipment, including calculators, photocopiers and telephone systems

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- computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies
- a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature
- a suitable work area appropriate to the construction process.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

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- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Site works include:

- activities intended to render an area suitable for building or other construction activity
- determining and setting out building or construction features
- earthmoving, using tracked or wheeled earthmoving equipment
- establishing personal and vehicle access and egress to and from the site.

Contracts include:

- Australian standard contracts (including the AS2124 and AS4000 series)
- Construction Industry Contract (CIC) suite
- individual organisational contracts
- Joint Contracts Committee (JCC) suite
- Master Builders Association (MBA) and Housing Industry Association (HIA) and standard industry contracts

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RANGE STATEMENT

	• Simple Building Works (SBW), including series 1 and series 2 (SBW2 Lump Sum).
Contract documents include:	• building permits or approvals • certification from local authorities • design details • formal contracts • materials specifications • quantities • site plans and sketches.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4032A Apply contract law to sales processes

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to apply contract law to the sales process, for either residential or commercial construction. Knowledge of contract selection, pre-contract agreements, preliminary contracts, insertion of appropriate clauses and the inclusion of the contract in the sales process is essential.

Application of the Unit

Application of the unit

This unit of competency supports the needs of sales consultants, builders and other professionals in the building and construction industry responsible for applying relevant legislation to the sales process.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Apply contract law as it relates to the sales process.	1.1. ***Contract law*** is applied according to relevant federal and state legislation and common law principles, including the law of contract, offer and acceptance. 1.2. Importance of contract to sales process and implications of contract law are explained to client. 1.3. Types and purpose of contracts employed within the industry and are explained to the client. 1.4. ***Clauses in the contract*** are described to the client and the reasons for inclusion and impact are explained. 1.5. Appropriate measures to be taken in the event of an anomaly in the rendering of the contract are determined and explained to the client.
2. Identify other legislative requirements applying to the sales process.	2.1. Contracts are negotiated in accordance with ***other federal***, ***state or territory laws***, ***regulations and codes***, including the Trade Practices and Fair Trading Acts and regulations. 2.2. Cooling off periods, definitions of building work and provisional sum (PS) and prime cost (PC) allowances are applied.
3. Identify and apply types of pre-contract agreements.	3.1. Identify ***pre-contract agreements*** that meet legal and organisational requirements. 3.2. ***Pre-contract clauses*** are discussed and agreed with the client. 3.3. Apply correct pre-contract agreements.
4. Finalise the pre-contract agreement with customer.	4.1. Clauses that reflect client's requirements are included in pre-contract agreement. 4.2. Documents are signed in accordance with legal and organisational requirements. 4.3. Payment or deposit is received from client in accordance with legal and contractual requirements. 4.4. Documents are processed according to organisational policy.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to communicate by telephone, facsimile, email and in writing
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - come to agreement with the client
  - participate in discussions
  - provide information to clients
  - read and interpret:
    - codes of practice
    - complex legal text
    - contracts
    - legislation
    - regulations
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to complete workplace documentation, including the drafting of responses to queries relating to the finer points of contracts.

Required knowledge

Required knowledge for this unit is:

- contract types and the circumstances they cover
- definitions and interpretations commonly applied to contracts
- definitions of building work
- Fair Trading regulations, including cooling off periods
- legal meanings of terms and clauses in building and construction contracts
- relationship between the organisation and its clients.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the

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EVIDENCE GUIDE

Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed by the effective application of contract law to a building sale contract. This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • explain importance of contract in the sales process to the client and how contract is applied • select right contract for particular project and explain reasons for that choice • select appropriate clauses and conditions within contract and explain impact of those clauses • administer contract to standard required by the organisation and within any legal or regulatory requirements that may exist within the state or territory in which the work is being done • determine and explain appropriate measures to be taken in the event of an anomaly in rendering contract.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • documentation that should normally be available in either a building or construction office

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EVIDENCE GUIDE

- relevant codes, standards and regulations
- office equipment, including calculators, photocopiers and telephone systems
- computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies
- technical reference library with current publications on measurement, design, building construction and manufacturers' product literature
- suitable sales area appropriate to the construction process.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with

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EVIDENCE GUIDE

a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Contract law includes:

- Builders Registration Acts in various States and Territories
- common law
- federal and state legislation, such as:
  - Home Building Contracts Act 1991 in Western Australia
  - Home Building Act and Regulations 1989 in New South Wales.

Clauses in the contract include:

- cost adjustments
- extensions of time
- offers and acceptances
- payments

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RANGE STATEMENT

	• retention of moneys • scope of work • terms and representations.
Other federal, state or territory laws, regulations and codes include:	• common law • Commonwealth Trade Practices Act • consumer credit codes in each State and Territory • Fair Trading Act 1987 in Western Australia.
Pre-contract agreements include:	• offer and acceptance documentation • preliminary contracts • preparation of plan agreements.
Pre-contract clauses include:	• conditions • scope of work • time for completion.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4033A Maintain the sales environment

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to set up and maintain the sales environment, providing a clean and attractive location in which to promote and sell the organisation's products and services.

Application of the Unit

Application of the unit This unit of competency supports the needs of sales consultants and other professionals within the building and construction industry responsible for the marketing and sale of new residential and commercial constructions. It is essential that competence is demonstrated by the ability to establish and maintain an environment in which the best features of display are possible and customers feel free to discuss their ideas and options and obtain accurate and well informed advice.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Organise the display or presentation area.	1.1. ***Display or presentation area*** is maintained to a professional standard. 1.2. Customer facilities are provided, including adequate parking, a children's activity area and adequate seating, and the needs of people with disability, including adequate and accessible parking. 1.3. Display or presentation area is correctly arranged for adequate access, reduced noise, privacy and desk or demonstration space.
2. Place, display and arrange plans, brochures and product information.	2.1. Displays are set up at an appropriate level, within reach, ensuring that traffic through the area is not impeded. 2.2. ***Product information*** provided is accurate, understandable and attractively packaged. 2.3. Main features of products are identified, including design and visual features, specifications and cost advantages. 2.4. Enterprise promotional campaign materials are made available to all sales consultants.
3. Implement housekeeping policies.	3.1. Displays or sales areas and offices are used in accordance with company policies. 3.2. ***Housekeeping*** requirements, such as cleaning, lighting and room aesthetics, are addressed to maintain a pleasant and fresh environment.
4. Identify maintenance requirements.	4.1. Maintenance requirements are identified and communicated to the organisation. 4.2. Maintenance matters are followed up.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:

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REQUIRED SKILLS AND KNOWLEDGE

- enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
- communicate maintenance requirements to organisation
- convey information factually and accurately without overpowering the client
- interact clearly and effectively with members of the public
- use and interpret non-verbal communication
- use language and concepts appropriate to cultural differences
- coordinating and scheduling skills.

Required knowledge

Required knowledge for this unit is:

- contemporary understanding of effective interior design solutions
- organisation standards for the management of the display home or setting
- specific customer requirements in relation to access and cultural requirements and protocols.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by arranging a sales presentation area with appropriate displays of product information.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- select most appropriate location in which to establish the sales environment, providing an area in which it is possible to hold a private conversation with limited distraction from other persons
- establish displays of materials and drawings in positions of prominence without obstructing the movement of people through the area
- maintain an environment, which is well lit and pleasantly appointed, clean and free from dirt and debris.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- documentation that should normally be available in either a building or construction office
- relevant codes, standards and government

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	regulations • office equipment, including calculators, photocopiers and telephone systems • computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies • technical reference library with current publications on measurement, design, building construction and manufacturer's product literature • sales and promotional materials and display units • suitable work area appropriate to the sales process. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances

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assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Display or presentation areas include:

- areas set aside for promotional purposes in display centres
- exhibition spaces
- front office scenarios
- mobile display spaces
- portable display areas and stands.

Product information includes:

- artists impressions and sketches
- brochures
- colour charts
- plans and drawings

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	• price lists • samples of materials and building products.
Housekeeping includes:	• general cleanliness and hygiene of display areas • maintaining adequate lighting • maintaining the cleanliness of display racks and spaces • regular dusting and vacuuming • rubbish and litter removal.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4034A Apply codes and standards to building trade and services contracting

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to access, interpret and apply relevant standards and codes applicable to the performance of building trade contracting and plumbing and services. Successfully complying with the range of relevant standards and codes requires a thorough and relevant knowledge of the purpose of the Building Code of Australia (BCA) and the Plumbing Code of Australia (PCA), coupled with the ability to interpret and apply specific and relevant standards across the range of trades and service sectors.

Application of the Unit

Application of the unit

This unit of competency supports trade contractors and building service sector practitioners responsible for ensuring compliance with the building or plumbing codes and standards relevant to their industry sector. The unit can be applied to different trades within the building, construction and plumbing and services industry.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Access and interpret relevant code and standard requirements.	1.1. Clauses from the national industry code (BCA or PCA) that apply to ***relevant trade areas*** are identified. 1.2. Prescriptive requirements of relevant BCA or PCA clauses are determined. 1.3. Requirements of relevant ***Australian standards*** are accessed and interpreted accordingly. 1.4. Application of relevant state and territory variations and the identified schedule of referenced documents within the BCA or PCA are accessed and their application evaluated.
2. Apply relevant codes and standards.	2.1. Relevant standards and codes are applied to the selection of work methods. 2.2. Relevant standards and codes are applied to the selection of materials and equipment. 2.3. ***Assessment methods*** are put in place to ensure compliance with relevant codes and standards.
3. Manage ongoing compliance with codes and standards.	3.1. Strategies are identified to ensure current standards and codes are accessed and used. 3.2. Mechanisms are identified and used to inform workers of the required application of relevant codes and standards. 3.3. Impact of new materials, equipment or work processes on compliance with relevant standards and codes is evaluated before implementation. 3.4. Relevant documentation and reporting processes are identified and completed in accordance with the relevant codes and standards.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:

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REQUIRED SKILLS AND KNOWLEDGE

- enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
- provide information to workers
- read and interpret:
  - Australian standards
  - BCA or PCA
  - other relevant documentation
- use and interpret non-verbal communication
- use language and concepts appropriate to cultural differences
- technological skills to facilitate use of the organisation's software and office technology
- written communication skills to complete relevant documentation and reports.

Required knowledge

Required knowledge for this unit is:

- definitions and common technical terms or usage specified under general provisions of BCA, PCA and other standards
- nature of materials and the effects of performance
- relevant construction industry legislative and OHS requirements, codes and practices
- work drawings and specifications.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by the application of design principles and solutions specified in the DTS and performance-based concept of BCA criteria applied to building projects or the PCA criteria applied to plumbing and services projects.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- comply with organisational quality procedures and processes
- apply and interpret relevant documentation and codes
- accurately apply relevant BCA or PCA codes and standards relating to performance and compliance of building project work.
- demonstrate understanding of the assessment methods available to determine whether a building solution complies with performance requirements or DTS provisions of the BCA.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- BCA and relevant Australian/New Zealand

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	standards • PCA and relevant Australian/New Zealand standards • documentation, including design brief drawings, specifications, codes, design concepts, construction schedules and other necessary supporting documents • research resources, including product information and data • relevant computer software package and suitable hardware. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the

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point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Relevant trade areas include:
- bricklaying
- cabinet making and joinery
- carpentry
- painting
- plastering
- plumbing and services
- roof tiling
- stonemasonry
- tiling.

Australian standards include:
- AS3553: 1988 Adhesives for floor and wall applications - resilient vinyl, linoleum and rubber sheet and tiles
- AS3660 Termite management

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	• AS3740: 2004 Waterproofing of wet areas in residential buildings • AS3786 Smoke alarms • AS3958.1: 1991 Ceramic tiles - guide to the installation of ceramic tiles • AS4256 Plastic roof and wall cladding material • AS/NZS2311: 2000 Guide to the painting of buildings • AS/NZS2908 Cellulose cement products.
Assessment methods include:	• comparison with deemed-to-satisfy (DTS) provisions of the BCA • evidence of suitability • expert judgement • verification method.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4035A Initiate the heritage works process

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to undertake the essential processes prior to the conduct of heritage works, such as conservation, restoration, duplication and preservation of a building or structure of historical significance. The unit recognises the complexity of the heritage restoration process and the importance of establishing effective work relationships and communications between the range of professionals, tradespersons and stakeholders involved in the project. Establishing common understanding of the nature of the site to be restored and the tasks to be performed are critical to the effective and efficient completion of the project.

Application of the Unit

Application of the unit

This unit of competency supports the range of technical specialists, builders, project managers and related construction industry professionals responsible for heritage restorations.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify project, location and surrounds.	1.1. Location and nature of the restoration work to be undertaken are identified and recorded following consultations with the architect and site inspections. 1.2. Site ***access*** and egress for work location are noted and recorded. 1.3. Area to be disturbed is determined and surrounding areas are noted for possible work application effects and cover ***protection requirements***. 1.4. Nature of the work is assessed and noted for possible use of ***heavy or bulky equipment***. 1.5. Effect on public access is assessed and recorded to ensure protection of the public and the environment is undertaken.
2. Consult with technical specialists.	2.1. Consultations with the conservator, engineer or supervisor are conducted to discuss and clarify specific job requirements. 2.2. Specific risks and areas of concern arising due to the nature of the heritage and conservation aspects of the work are identified. 2.3. Agreed processes and timeframes are established to ensure effective communications between project team members. 2.4. Role responsibilities and requirements are discussed, understood and agreed with project team members.
3. Consult with clients and stakeholders.	3.1. Consultations are held with the client and other stakeholders, as appropriate, to clarify expectations regarding access to the site, performance of the work and timeframes. 3.2. Clients and stakeholders are consulted to ensure common understanding of the historical and/or cultural significance of the heritage building under restoration. 3.3. Appropriate communication channels and reporting processes are discussed and agreed, as appropriate, with the client and other relevant stakeholders.
4. Clarify the impact of contractual requirements.	4.1. Relevant ***contractual requirements*** affecting the performance of the restoration work are identified and clarified. 4.2. Relevant dispute resolution processes that are to be used if required are identified.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- analytical skills to analyse operations and develop procedures
- communication skills to:
  - communicate with team
  - consult with technical specialists, client and other stakeholders
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - facilitate discussions
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to record relevant information
- organisational skills, including the ability to plan for and set out work
- time management skills and prioritisation skills to enable work to be completed within agreed timeframes.

Required knowledge

Required knowledge for this unit is:

- Australian standards relevant to the work
- conservation processes, including good conservation practice arising from principles of Burra Charter
- dispute resolution processes
- methods and processes relating to historic building construction, including the range and use of building materials, structure of buildings and drafting techniques
- relevant architectural knowledge, including orders of architecture and the characteristics and features of period architecture
- trade-specific techniques used in restoration work
- workplace and equipment safety requirements, including relevant statutory regulations, codes and standards.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by completion of relevant processes and activities essential prior to the commencement of a heritage restoration project.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- apply conservation considerations and consultative processes associated with preservation of historic structures
- demonstrate understanding of preservation of fabric
- comply with OHS regulations applicable to workplace operations
- apply organisational quality procedures and processes within the context of initiating the heritage restoration process
- identify job-specific requirements and inherent risks associated with heritage restoration
- select and use appropriate processes to analyse and identify particular needs for projects
- communicate and agree on expectations and timeframes for the work to be undertaken
- apply appropriate techniques to cross-reference interlocking or overlapping operations
- demonstrate techniques to check and ensure relevant information and stages of preparation are fully covered
- interactive communication with others to

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	ensure all factual information is gathered and shared with relevant stakeholders.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • restoration project appropriate to competency • appropriate documentation and data related to project. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances

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assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Access includes:

- access to structures and storage facilities or space, which may be limited.

Protection requirements include:

- environmental protection
- protection for the public.

Heavy or bulky equipment includes:

- compressors
- cranes
- excavators
- mobile scaffold or working platforms.

Contractual requirements

- materials to be used
- performance standards

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RANGE STATEMENT

include:

- timeframes.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4036A Prepare to undertake the heritage restoration process

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to undertake the preparation of the heritage restoration job by skilled and experienced tradespersons.

Application of the Unit

Application of the unit This unit of competency supports the range of tradespersons across disciplines who are involved in heritage restoration. It is not the intent of this or related units to replicate the technical processes associated with the performance of the trade skills necessary to complete the work. The unit applies to the particular processes associated with the application of existing high-level trade skills in the specialist heritage restoration environment.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Ensure compliance with conservation and workplace standards.	1.1. Conservation requirements and processes associated with the preservation of historically significant buildings are identified. 1.2. ***Quality assurance*** requirements associated with the performance of the relevant trade skill are identified. 1.3. ***OHS requirements***, including the identification of ***personal protective equipment*** are identified. 1.4. ***Safety hazards*** are identified and correct procedures to minimise risk to self and others are identified and implemented.
2. Identify and obtain historical data.	2.1. Period and style of construction of the building or structure are ascertained and recorded. 2.2. Available construction information is sourced from engineers and records and analysed for relevant and ***historically accurate information***. 2.3. ***Materials*** used for previous restoration work are identified, recorded and verified as appropriate for the work. 2.4. Information relevant to the location, structure and specifications of the building are photographed or collated using alternative means and recorded.
3. Prepare work area and resources.	3.1. Cover protection of nearby surfaces is carried out in accordance with restoration activities. 3.2. Scaffolding barricades and signage are erected to OHS regulations in accordance with job requirements. 3.3. Appropriate lighting is erected at the site. 3.4. Materials required for the identified restoration work are calculated and acquired in accordance with organisational procedures. 3.5. ***Tools and equipment*** are selected and checked for serviceability.
4. Establish and maintain records for restoration purposes.	4.1. Method of organising files is determined in accordance with organisational procedures. 4.2. System of presentation of the file is organised and a list made of ***relevant categories of information***. 4.3. Photographs of the current structure are taken and stored for future reference as required. 4.4. Details of materials used, including colour matches, are recorded and filed throughout the life of the

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ELEMENT	PERFORMANCE CRITERIA
	restoration project.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - communicate with team
  - consult with technical specialists, client and other stakeholders
  - facilitate discussions
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to record relevant information
- numeracy skills to apply measurements and calculations
- organisational skills, including the ability to plan for and set out work.

Required knowledge

Required knowledge for this unit is:

- Building Code of Australia (BCA) and other Australian standards relevant to the nature of work and materials being used
- conservation processes, including good conservation practice arising from principles of Burra Charter
- methods and processes relating to historic building construction, including the range and use of building materials, structure of buildings and drafting techniques
- relevant architectural knowledge, including orders of architecture, and characteristics and features of period architecture and period plastering associated with historic buildings
- workplace and equipment safety requirements, including relevant statutory regulations, codes and standards.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed by carrying out all processes required to prepare for a restoration project. This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • apply conservation considerations and consultative processes to determine desired restoration application and finish • demonstrate understanding of preservation of fabric • comply with OHS regulations applicable to workplace operations • apply organisational quality procedures and processes within the context of heritage restorations • record and identify materials used • use appropriate techniques to provide cover protection • use safe and effective procedures to handle hazardous materials • identify typical faults and problems that occur and take necessary action to rectify • interact with others to ensure safe and effective work site operations.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge

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will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- historic work locations appropriate to competency range and activities
- materials appropriate to application activities
- appropriate documentation and data related to tasks
- scaffolding equipment, plant, tools and equipment relevant to activity processes.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice,

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with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Quality assurance includes:
- application techniques
- attention to specifications of work
- cleanliness of surfaces
- preparation of surfaces
- quality of materials
- quality of tools
- quality records
- workplace operations and procedures.

OHS requirements cover:
- handling materials
- protective clothing and equipment
- use of ladders
- use of tools and equipment

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RANGE STATEMENT

	• working platforms and scaffolding • workplace environment and safety.
Personal protective equipment includes:	• boots • caps • ear plugs and muffs • gloves • masks and respirators • safety glasses and goggles.
Safety hazards include:	• cutting back loose surfaces • dust • handling hazardous materials • wind • working from platforms.
Historically accurate information includes from sources such as:	• building trusts • elderly local residents • historical societies • municipal building records • National Trust • restoration contractors.
Materials may include:	• fixings and fasteners of the period era • paints • plaster mixes • specialist materials of the relevant period era • tiles.
Tools and equipment include:	• bricklaying: shovels, wheelbarrows and string lines • carpentry: measuring tapes and rules, hammers, spirit levels, hand saws, scrapers, power leads, trowels, mortar boards and straight edges • general construction: shovels, modelling tools, brooms, wheelbarrows and trowels • painting: brushes, straight edges and ladders • plastering: wood floats, steal floats, hawk, spirit levels and trowels • plumbing: hammers, mallets and blow torches • stonemasonry: chisels, wheelbarrows and modelling tools • tiling: squares, scrapers, power leads, trowels, mortar boards and straight edges.

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RANGE STATEMENT

Relevant categories of information include:	• construction technical data • drawings, sketches and photographs • material technical data • materials and suppliers • materials in construction and finishing • OHS building regulations • original structure and construction • reference notes • restoration records • restoration work carried out • specialist materials for the period era • specifications • technical brochures.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4037A Prepare drawings for heritage works

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to prepare drawings for heritage works associated with historic buildings and structures of cultural significance. To successfully prepare drawings requires a comprehensive understanding of architectural forms, specifically period architecture, and appropriate drafting techniques. The unit requires the ability to interpret specifications for drawings, measure and calculate dimensions accurately, and work to scale.

Application of the Unit

Application of the unit

This unit of competency supports builders, project managers and related construction industry professionals responsible for heritage works during residential and commercial projects.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for drawing requirements.	1.1. Specifications for drawing are identified from request or conservation authority requirements. 1.2. Dimensions of the ***historical or significant building*** are determined in accordance with appropriate ***methods***, taking into account the type of structure, access to details and previous drawings available, if applicable. 1.3. Method of recording feature details is determined in accordance with nature of the feature, location and accessibility. 1.4. Method and system of recording identification, location and dimensional information are determined and applied in accordance with requested drawing requirements. 1.5. Equipment and instruments required are identified, listed and used in accordance with recording task requirements.
2. Organise information for drawing preparation.	2.1. Information is gathered and organised to determine overall dimensions of the building, structure or details to be drafted. 2.2. Information is gathered to identify and group all recorded details associated with each area or section of the building or structure. 2.3. Size of the drawing and scale to be used is determined in accordance with dimensions of building, structure or section. 2.4. Sketches, tracings or photographs of recorded features are identified and located with other recorded information related to ***feature work***.
3. Draw or develop orthographic description.	3.1. Block layout of views and designed spacings, where applicable, are drawn or developed to planned layout and scaled accurately to recorded or calculated dimensions. 3.2. ***Orthographic description*** views are detailed to show visible lines of structure and elements as seen with each view to correct scale representation of recorded dimensions. 3.3. Architectural drawing conventions, symbols and hatching, where applicable, are shown on drawings in accordance with AS1100.301 - 1985 Architectural Drafting.

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ELEMENT	PERFORMANCE CRITERIA
	3.4. Plans of large buildings are produced by use of grids, where applicable, to provide cross-referencing and dimensioning by coordinates.
	3.5. Dimensions and reference notations are located relevantly on drawings to provide full detailed descriptions as required with each view.
	3.6. Appendices and reference details of drawing are provided with drawing as required and in accordance with overall request.
4. Draw or develop sectional detailed drawings.	4.1. ***Sectional detailed drawings*** are drawn or ***developed*** to scale to show detailed structural description of relationship between elements in accordance with recorded dimensions.
	4.2. Architectural hatching is shown on drawings to represent materials, in accordance with relevant Australian standards.
	4.3. Dimensions and reference notation are located on drawings to provide full details of sectional description.
5. Develop detailed drawings of feature work.	5.1. Photographic recording of feature work shape and design is enlarged by photocopying to provide more realistic size for analysis and reproduction.
	5.2. Gridlines are determined in accordance with actual dimensions of the feature work shape and are reproduced to enlarged photocopy.
	5.3. Enlarged photocopy is closely examined for distortion from the photographing process and adjustments are made to the design, as necessary.
	5.4. Tracing recordings are examined in accordance with the whole feature or part thereof and linked with other tracings or sketches to ascertain the feature shape to be reproduced.
	5.5. Design shape drawings are developed to produce accurate design to scale with grid lines where applicable.
	5.6. Cross-sectional details are produced accurately to scale, to provide three-dimensional information.
	5.7. Dimensions, reference notation, specific location and appendices are produced for drawings in accordance with client request or design aims.
6. Complete work.	6.1. Drawings are checked for accuracy, clarity of line, completeness of drawing and associated dimensions and details.

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ELEMENT	PERFORMANCE CRITERIA
	6.2. Copies are made, where applicable, in accordance with original request. 6.3. Production details and coded reference information are recorded.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to use instruments and equipment for measuring
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to record relevant information
- numeracy skills to calculate measurements
- organisational skills, including the ability to set out work
- work to scale.

Required knowledge

Required knowledge for this unit is:

- Australian standards - AS1100.101 and AS1100.301
- conservation processes, including good conservation practice arising from principles of Burra Charter
- finishing trade applications to materials
- methods and processes relating to historic building construction, including the range and use of building materials, structure of buildings and drafting techniques
- methods of measuring
- relevant architectural knowledge, including orders of architecture and the characteristics and features of period architecture

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REQUIRED SKILLS AND KNOWLEDGE

- workplace and equipment safety requirements, including relevant statutory regulations, codes and standards.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by carrying out the necessary preparatory processes and developing at least two examples of each form of drawing specified, using sample or case study heritage projects for any of the buildings listed in the range statement.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- clearly understand conservation considerations and consultative processes associated with preservation of historic structures
- clearly appreciate preservation of fabric
- comply with OHS regulations applicable to workplace operations
- apply organisational quality procedures and processes within the context of preparing drawings to conservation requirements
- apply recording and identification system for measurements, locations and details
- select and use appropriate processes, instruments and equipment to measure and record information
- use appropriate and safe techniques to obtain measurements and details
- apply accurate techniques in preparing information for related drawings
- select and use appropriate techniques to ascertain accurate analysis of featured design shapes

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EVIDENCE GUIDE

	• apply techniques to ensure all relevant information is included in orthographic description • select and use appropriate techniques to produce accurate, sharp and complete drawings.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • historic locations appropriate to competency range • drafting and computer equipment • equipment relevant to measuring processes. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over

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EVIDENCE GUIDE

a period of time reflecting the scope of the role and the practical requirements of the workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Historical or significant building includes:

- built or sculptured artefacts
- cathedrals and churches
- civic buildings
- commercial and retail buildings
- doors

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RANGE STATEMENT

	• external features • fences • government buildings • houses • mansions • out buildings • walls • wharves • windows.
Methods include:	• accurately trace shapes or features • calculate height by use of levelling equipment and/or trigonometry • physically tape and measure all internal and external measurement • scale proportion of roof, chimney and spire heights from photograph where wall height is determined.
Feature work includes:	• decorative tiling • mosaic tiling • ornamental mouldings • ornamental plasterwork • ornamental stonework.
Orthographic description includes:	• front, rear and side elevations • plans • sectional elevations • sectional plans.
Sectional detailed drawings include:	• ceiling and roof framing construction • ceiling construction • chimney construction • cladding details • external wall construction • fence construction • footings and foundation • internal wall construction • roofing details • sub-floor construction.
Development of drawings includes:	• computer aided drafting • drafting techniques • drawings developed in accordance with National Trust guidelines or in accordance with AS1100.101 - 1992 Technical Drawing -

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RANGE STATEMENT

	General Principles, and AS1100.301 - 1985 Architectural Drawing.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4038A Prepare work plans for restoration work

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency specifies the outcomes required to prepare a work plan and the corresponding procedures necessary to carry out restoration work on a building or structure of historical significance.

Application of the Unit

Application of the unit	This unit of competency supports builders, project managers and related construction industry professionals responsible for heritage restorations during residential and commercial projects.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify project, location and surrounds.	1.1. Location and nature of ***restoration work*** to be undertaken are identified and recorded, following consultation with the architect and site inspections. 1.2. Site ***access*** and egress for work location are noted and recorded. 1.3. Area to be disturbed is determined and surrounding areas are noted for possible work application effects and cover protection. 1.4. Nature of the work is assessed and noted for possible use of ***heavy or bulky equipment***. 1.5. Effect on public access is assessed and recorded to ensure protection of the public and the environment is undertaken. 1.6. Presence of ***hazardous materials*** is identified and appropriate workplace procedures are followed. 1.7. A heritage works safety management plan is produced.
2. Prepare site prior to commencing work.	2.1. Demolition processes and procedures, if applicable, are identified and noted. 2.2. Restoration processes and ***methods*** are identified and noted for procedures to repair or replace material and finish surface area with restoration work. 2.3. Where applicable, height and dust considerations are identified and noted to inform requirements for scaffolding and cover protection. 2.4. OHS requirements for support of work personnel during the period of project are identified and recorded. 2.5. Site preparation requirements are determined and recorded with ***comments*** for inclusion in the work plan.
3. Identify demolition and salvage work.	3.1. Procedures required to carry out the demolition are identified in stages and recorded. 3.2. Materials to be salvaged and preserved are identified and recorded for specific handling procedures. 3.3. Procedures for the handling and storage of salvaged materials are identified and protection and reference comments are recorded in accordance with organisational procedures.
4. Identify material delivery and storage	4.1. Materials of substantial size and quantity are identified for delivery access and location or storage

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ELEMENT	PERFORMANCE CRITERIA
requirements.	prior to use, and comments are recorded in accordance with organisational procedures. 4.2. General materials are identified for delivery and location or storage prior to use and comments are recorded in accordance with organisational procedures.
5. Identify and record restoration processes.	5.1. Preparation of surfaces, where applicable, is identified for stage processes and application work and comments are recorded in accordance with organisational procedures. 5.2. Application, fixing or installation of material is determined and particular comments are recorded in accordance with organisational procedures. 5.3. Application of finishing processes is identified and particular comments are recorded in accordance with organisational procedures. 5.4. Repairs and restoration work to disturbed locations are identified and comments are recorded for inclusion in work plan.
6. Identify and record clean-up procedures.	6.1. Items for clean-up and removal are listed and relevant procedures included in the work plan. 6.2. Unused or reusable materials and waste are listed for storage or removal procedures. 6.3. Cleaning of the area is specified and relevant comments of anticipated processes are noted. 6.4. Removal of portable workforce sheds is identified and listed in work plan and related comments are recorded.
7. Prepare work plan.	7.1. Recorded notes and information are reviewed for direct reference and inclusion in work plan. 7.2. Additional areas of information for work plan are researched and determined in content and expression. 7.3. Information is prepared and work plan written in accordance with organisational procedures. 7.4. Draft work plan is checked and amended to ensure completeness of all necessary stages prior to ***work plan presentation***.

Required Skills and Knowledge

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- analytical skills to be able to analyse operations and develop procedures
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - consult with architect
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to:
    - record relevant information
    - produce a safety management plan and work plan
- organisational skills, including the ability to plan for and set out work.

Required knowledge

Required knowledge for this unit is:

- Australian standards relevant to the nature of work and demolition
- Burra Charter
- conservation processes, including good conservation practice arising from principles of decorating and finishing techniques used in restoration work
- methods and processes relating to historic building construction, including the range and use of building materials, structure of buildings and drafting techniques
- relevant architectural knowledge, including orders of architecture and characteristics and features of period architecture
- site preparation and organisational skills
- workplace and equipment safety requirements, including relevant statutory regulations, codes and standards.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by determining work site operations for a heritage restoration project and developing and preparing a work plan for the project.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- apply conservation considerations and consultative processes associated with preservation of historic structures
- demonstrate understanding of preservation of fabric
- comply with OHS regulations applicable to workplace operations
- apply organisational quality procedures and processes within context of preparing work plans to conservation requirements
- apply recording and identification system for determining work site operations
- select and use appropriate processes to analyse and identify particular needs for project operations
- apply appropriate techniques to ensure coverage of all elements of project's operations
- apply accurate techniques in preparing identified and determined information for reference in work plan
- apply appropriate techniques to cross-reference interlocking or overlapping operations

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EVIDENCE GUIDE

	• select and use appropriate format and presentation to produce final finished plan • apply techniques to check and ensure all relevant information and stages of the project are fully covered • communicate interactively with others to ensure all factual information is gathered.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • restoration project appropriate to unit • appropriate documentation and data related to project. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over

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a period of time reflecting the scope of the role and the practical requirements of the workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Restoration work includes:

- applied finishes
- cladding restoration
- decorative finishes
- lining finishes
- roofing restoration

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RANGE STATEMENT

	• structural replacement • structural restoration.
Access:	• to structures and storage facilities or space may be limited.
Heavy or bulky equipment includes:	• compressors • cranes • excavators • mobile scaffold or working platforms.
Hazardous materials include:	• lead paint • materials containing asbestos.
Methods may vary in accordance with:	• analysis during application work where consultation is required to determine best conservation application.
Comments as appendices to work plan include:	• those regarding various controlling authorities for OHS, municipal building control, Environment Protection Authority (EPA) and structure trust authority.
Work plan presentation includes:	• clear site • clear work location • delivery and storage of materials • demolition and salvage • excavation • finish application • preliminary investigation • preparation of surfaces • protection of environment • protection of public • protection of structure • restoration • site preparation • work location preparation.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4039A Undertake the heritage restoration process

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required by skilled and experienced tradespersons to undertake heritage restoration work.

Application of the Unit

Application of the unit This unit of competency supports the range of tradespersons across disciplines who are involved in heritage restoration and conservation projects. It is not the intent of this or related units to replicate the technical processes associated with the performance of the trade skills necessary to complete the work. The unit applies to the particular processes associated with the application of existing high-level trade skills in the specialist heritage restoration environment.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Undertake restoration work.	1.1. Performance of the technical restoration work is undertaken in accordance with the highest standards of the relevant ***trade skills***. 1.2. ***Legislative and organisational requirements*** are complied with throughout the heritage restoration work. 1.3. Ongoing consultations with the architect and relevant stakeholders are maintained to ensure contractual requirements are fulfilled.
2. Monitor progress of restoration work.	2.1. Conformance to the restoration work plan is monitored during completion of the restoration work. 2.2. Adjustments to processes and the work plan to address problems that emerge during the heritage restoration are made and documented as required, in accordance with established organisational or job procedures. 2.3. Reporting of work progress is completed in accordance with established work plan, and job and contractual requirements. 2.4. Technical issues arising during the restoration that impact on the work of related trades are identified and communicated. 2.5. Effective strategies for problem resolution are identified within the project team.
3. Ensure area is cleaned at completion of the restoration work.	3.1. Scaffolding is dismantled carefully, removed and stored. 3.2. Cover protection for surfaces is carefully removed. 3.3. Surface protection and unused materials are removed and stored. 3.4. Work area is cleared and all waste material is disposed of in accordance with legislative and organisational requirements. 3.5. Tools and equipment are cleaned, maintained and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret:
    - documentation from a variety of sources
    - plans specifications and drawings
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to record relevant information
- equipment handling techniques and safe handling practices
- numeracy skills to calculate measurements
- organisational skills, including the ability to plan for and set out work
- problem solving skills to enable resolution of technical issues which threaten to disrupt work
- trade skills relevant to the restoration work being undertaken.

Required knowledge

Required knowledge for this unit is:

- Building Code of Australia (BCA) and other Australian standards relevant to the nature of work and materials being used
- conservation processes, including good conservation practice arising from principles of Burra Charter
- methods and processes relating to historic building construction, including range and use of building materials, structure of buildings and drafting techniques
- relevant architectural knowledge, including orders of architecture, characteristics and features of period architecture and period plastering associated with historic buildings
- workplace and equipment safety requirements, including relevant statutory regulations, codes and standards.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by application of a recognised trade skill to a heritage restoration project. Application should include correct use of trade skills and knowledge, ongoing monitoring of own work, compliance with relevant legislation and adherence to relevant heritage restoration codes and standards as well as organisational requirements, and correct clean-up procedures at completion of the work.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- apply conservation considerations and consultative processes to determine restoration application and finish
- demonstrate understanding of preservation of fabric
- comply with OHS regulations applicable to workplace operations
- apply organisational quality procedures and processes within the context of heritage restorations
- record and identify materials used
- use appropriate techniques to provide cover protection
- use safe and effective procedures to handle hazardous materials
- identify typical faults and problems that occur and necessary action taken to rectify
- communicate interactively with others to

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EVIDENCE GUIDE

	ensure safe and effective work site operations.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • historic work locations appropriate to competency range and activities • materials appropriate to application activities • appropriate documentation and data related to tasks • scaffolding equipment, plant, tools and equipment relevant to activity processes. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the

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EVIDENCE GUIDE

workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Trade skills include:

- carpentry
- gilding
- painting
- plastering
- plumbing
- stonemasonry

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RANGE STATEMENT

	• tiling.
Legislative and organisational requirements include:	• adherence to all relevant codes and Australian standards • compliance with relevant quality assurance requirements pertaining to the relevant trade skill being employed • OHS requirements, including the use of personal protective equipment, barricades and safe handling practices for all materials.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4040A Prepare report for heritage restoration work

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to prepare and present written reports detailing conditions associated with buildings and structures of historic significance requiring restoration or preservation attention. Reports are completed for specific areas of work in accordance with individual building trade applications.

Application of the Unit

Application of the unit

This unit of competency supports builders, project managers and related construction industry professionals responsible for heritage restorations.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Gather information to be included in the report.	1.1. Details of the ***area of the structure*** and information regarding ***areas of fault*** are identified. 1.2. *General description of the building or structure* and its period of construction are identified. 1.3. Surrounding area and faults are identified for ***inspection and investigation***. 1.4. Assessment of unsafe conditions is conducted and identified for investigation.
2. Assess and outline possible means of restoring the areas of the structure.	2.1. Assessment of conditions and degree of deterioration and disturbance are conducted and recorded using appropriate technical language. 2.2. Possible ***causes for deterioration*** of condition and stability are assessed and recorded as guidelines for investigatory enquiries and restoration considerations. 2.3. Sound construction or finish applications surrounding or adjacent to the faulted area are identified and recorded to inform restoration processes. 2.4. Relevant information regarding unsafe conditions at or around the structure are identified and recorded. 2.5. Advice regarding restoration techniques and work required is identified and documented based on assessment of the structure.
3. Document and present the report.	3.1. Method of presenting the report in a logical and sequential manner is determined with key stakeholders and implemented. 3.2. Report is written to provide all investigated and determined information in accordance with request and agreed format. 3.3. Report is written in a manner that will be readily understood by relevant stakeholders.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

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REQUIRED SKILLS AND KNOWLEDGE

Required skills

Required skills for this unit are:

- ability to prepare drawings and work to scale
- ability to use instruments and equipment for measuring
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to record information and prepare reports
- numeracy skills to apply measurements and calculations
- organisational skills, including the ability to set out work
- teamwork skills and the ability to work with others to ensure coordination and cooperation between self and others in the heritage restoration.

Required knowledge

Required knowledge for this unit is:

- Building Code of Australia (BCA) and other Australian standards relevant to the nature of work and materials being used
- conservation processes, including good conservation practice arising from principles of Burra Charter
- methods and processes relating to historic building construction, including range and use of building materials, structure of buildings and drafting techniques
- relevant architectural knowledge, including orders of architecture and characteristics and features of period architecture
- workplace and equipment safety requirements, including relevant statutory regulations, codes and standards.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by determining all relevant information and preparing a written report on at least three separate categories of structure areas listed within the range of variables.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- apply conservation considerations and consultative processes associated with preservation of historic structures
- demonstrate understanding of preservation of fabric
- comply with OHS regulations applicable to workplace operations
- apply organisational quality procedures and processes within the context of preparing reports
- apply sound identification and recording system of investigation findings
- use appropriate processes, tools and equipment to carry out investigation examinations
- use appropriate safe techniques to use ladders and scaffolding
- demonstrate safe and effective procedures to handle hazardous materials
- apply sound and accurate techniques to prepare information for report
- select and use appropriate terminology relevant to applicable trade

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EVIDENCE GUIDE

	• use sound techniques to ensure report is well written and accurate • communicate interactively with others to ensure safe and effective work site operations.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • historic work locations appropriate to area of work • appropriate documentation and data related to investigations • ladder and/or scaffolding equipment • plant, tools and equipment relevant to investigation processes. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that:

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EVIDENCE GUIDE

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Area of the structure includes:

- ceilings
- doors
- external walls
- fences

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RANGE STATEMENT

	• floors • footings and sub-floor structure • rood cladding • roof structure • wall cladding • wall lining • wall structure • windows.
Identification of ***areas of fault*** requires:	• location of fault, internal or external to the building or structure • nature and extent of the fault or deterioration, identified in technical terms relevant to the respective trade work required • number of separate faults.

General description of the building or structure includes:	• building description:
	  • address of the structure
	  • description of the area surrounding structure where influential to the fault
	  • references to north and south identified and recorded in relationship to the sides of the structure
	  • type and condition of materials used in structure, including details of any missing materials
	• type of structural construction building types:
	  • cathedrals and churches
	  • civic buildings
	  • commercial and retail buildings
	  • fences
	  • government buildings
	  • houses
	  • mansions
	  • out buildings
	  • walls.
	  • wharves.

Inspection and investigation may involve use of access and safety equipment, such as:	• boots • gloves • hand tools • hard hat • inspection investigations ladders

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RANGE STATEMENT

	• jacket • masks and respirators • safety glasses • spirit levels • straight edges • torches • trestles and planks.
Causes of deterioration include:	• fire damage • storm impact from vehicles or trees and other objects • water damage.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4041A Undertake preparations for refractory work

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to undertake basic preparations prior to the commencement of work using refractory bricks and materials. It covers reading and interpreting plans and specifications, ensuring the use of quality materials as specified by engineers, and implementing relevant safety precautions prior to commencement of work.

Application of the Unit

Application of the unit

This unit of competency supports specialist and advanced tradespersons working in refractory bricklaying. It may be applied in the construction or repair of various fire resistant structures, including boilers, kilns and industrial furnaces.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Interpret refractory plans and specifications.	1.1. ***General and detailed refractory plans*** are accessed and analysed to determine nature of work to be undertaken. 1.2. Standard ***signs and symbols*** are noted, interpreted and implemented. 1.3. ***Notes*** to the plan are observed and complied with in accordance with design requirements. 1.4. Specified ***materials*** required are identified from the plans and obtained in accordance with organisational procedures.
2. Implement safety requirements.	2.1. Material safety data sheets (MSDS) are accessed and relevant ***safety precautions*** implemented. 2.2. Organisational ***OHS requirements*** are implemented and maintained.
3. Prepare refractory materials and equipment.	3.1. Test certificates of materials are checked to ensure materials meet required job specifications as detailed in refractory plans. 3.2. ***Tools and equipment*** are selected and checked for serviceability. 3.3. Mortar is prepared and mixed to design requirements.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret:
    - MSDS
    - refractory plans and specifications
    - test certificates

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REQUIRED SKILLS AND KNOWLEDGE

- other relevant documentation
- use and interpret non-verbal communication
- use language and concepts appropriate to cultural differences
- numeracy skills to interpret mathematical information, calculate material quantities and measure accurately
- organisational skills, including the ability to plan for and set out work
- teamwork skills and the ability to work with others to ensure coordination and cooperation between self and others
- technical skills to ensure ability to select and use relevant plant, tools and equipment.

Required knowledge

Required knowledge for this unit is:

- Building Code of Australia (BCA) and other Australian standards relevant to the nature of work and materials being used
- characteristics and applications of different materials used in refractory brickwork
- methods and processes relating to the use of refractory bricks and insulation materials for the construction of fire resistant structures
- organisational procedures for the acquisition of materials
- workplace and equipment safety requirements, including relevant statutory regulations, codes and standards.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by carrying out relevant preparations for refractory work. It should include analysis and interpretation of the plans and specifications, demonstrated understanding of all aspects detailed in the plans, implementation of safety precautions and correct selection of relevant materials and equipment.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully

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EVIDENCE GUIDE

	replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • demonstrate understanding of the purpose and application of refractory bricklaying • comply with OHS regulations applicable to workplace operations • use safe and effective procedures to handle hazardous materials • apply organisational quality procedures and processes within context of constructing or repairing structures employing refractory materials • read and interpret two-dimensional refractory plans and specifications • select and use processes, tools and equipment appropriate to job requirements • prepare materials and samples in accordance with job requirements • identify typical faults and problems with materials and equipment that occur and necessary action to rectify • communicate effectively with others to ensure safe work site operations.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • materials appropriate to refractory brickwork • plant, tools and equipment relevant to refractory brickwork. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to

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EVIDENCE GUIDE

	modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge • all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed. Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing

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	supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

General and detailed refractory plans include:	• detailed plans show aspects and sections of the structure in greater detail than the general plan • general plans show the entire structure to be constructed.
Signs and symbols relate to:	• assembly of completed parts of the structure • dimensions and scales • materials to be used • particular views of the structure • quality control requirements • sections of the structure • tolerances.
Notes include:	• details of Australian standards to be complied with • quality control requirements to be followed and documented • requirements for samples of castables to be taken.
Materials include:	• castables • different types of insulation materials, including insulation boards and bricks • fire bricks • fire clay • stainless steel joints.
Safety precautions include:	• environmental precautions, such as the operation of an extraction system to filter dust and fumes

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RANGE STATEMENT

	• use of personal protective clothing, including:
	  • disposable overalls
	  • dust masks
	  • eye and ear protection
	  • gloves
	  • respirator
	  • steel toe capped shoes.

OHS requirements include:	• handling materials • protective clothing and equipment • use of tools and equipment • working platforms and scaffolding • workplace environment and safety.
Tools and equipment include:	• clay mixer • measuring tapes and rules • mortar boards • rubber mallets and scutches • straight edges • string lines • trowels.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4042A Construct a fire brick wall and arch using refractory materials

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to construct a brick wall and arch using refractory materials, including castables, bricks and insulation. It covers the application of the unique skills and knowledge relevant to refractory work.

Application of the Unit

Application of the unit

This unit of competency supports specialist and advanced tradespersons working in refractory bricklaying. It may be applied in the construction or repair of various fire resistant structures, including boilers, kilns and industrial furnaces.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Set out and prepare the base location of work.	1.1. Location of the brickwork is set out to position in accordance with ***job specifications and drawings***. 1.2. Base location is prepared so that the surface is dry, horizontal, clean and flat, and in accordance with job specifications.
2. Lay brickwork.	2.1. Fire clay is applied to bricks to maintain joints at the specified thickness. 2.2. Bricks are in the ***required bond*** and set out, method and line, level and plumb in accordance with job specifications and drawings. 2.3. Bricks are cut to the correct length to maintain the required bond in accordance with manufacturer recommendations and job specifications. 2.4. Brickwork is completed with surplus fire clay removed to specification requirements.
3. Form a segmental arch.	3.1. Span and rise of the arch are identified and located in accordance with job plans and specifications. 3.2. ***Adjustable props*** are placed appropriately to support the timber arch centre, and ***adjusted*** as necessary. 3.3. Position of the central key brick is established and marked for easy identification.
4. Cut and lay bricks to position around the arch.	4.1. Bricks are cut and laid on the centre to form an arch to specifications. 4.2. Same sized ***wedge shape brick*** is maintained throughout the construction of the arch. 4.3. ***Measurements and placement*** of bricks are monitored and adjusted accordingly to ensure accurate application of job requirements.
5. Complete and review finished work.	5.1. Props and other support materials are removed. 5.2. Construction is finished and cleaned to meet job requirements and professional expectations. 5.3. Intrados of the arch is cleaned and repointed with mortar as necessary.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to use tools and equipment employed in refractory work
- ability to apply materials accurately and to required tolerances and specifications
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - communicate technical issues
  - communicate with the team
  - consult with architect and stakeholder
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- numeracy skills to apply measurements and calculations
- organisational skills, including the ability to plan for and set out work
- relevant application techniques specific to the laying and installation of refractory materials
- teamwork skills and the ability to work with others to ensure coordination and cooperation between self and others
- technical skills to select and use relevant tools and equipment.

Required knowledge

Required knowledge for this unit is:

- Building Code of Australia (BCA) and other Australian standards relevant to the nature of work and materials being used
- characteristics and applications of different materials used in refractory brick work
- methods and processes relating to the use of refractory bricks and insulation materials for the construction of fire resistant structures
- organisational procedures for the acquisition and storage of materials
- workplace and equipment safety requirements, including relevant statutory regulations, codes and standards.

Evidence Guide

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EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by constructing a fire brick wall and arch. This work may include a 230mm fire brick wall to incorporate an opening (600mm x 600mm) with a segmental arch above, a minimum of 1.5m long and 1.2m high to the top of the arch.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- demonstrate understanding of the purpose and application of refractory bricklaying
- comply with OHS regulations applicable to workplace operations
- use safe and effective procedures to handle hazardous materials
- apply organisational quality procedures and processes within context of constructing or repairing structures employing refractory materials
- read and interpret two-dimensional refractory plans and specifications
- select and use processes, tools and equipment appropriate to the job requirements
- prepare materials and samples in accordance with job requirements
- identify typical faults and problems with materials and equipment that occur and necessary action taken to rectify
- communicate effectively with others to ensure safe work site operations.

Context of and specific resources

This competency is to be assessed using standard

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EVIDENCE GUIDE

for assessment	and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • materials appropriate to refractory brickwork • plant, tools and equipment relevant to refractory brickwork. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at

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EVIDENCE GUIDE

the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Job specifications and drawings include:
- detailed plans showing aspects and sections of the structure in greater detail than the general plan
- general plans showing the entire structure to be constructed.

Required bond includes:
- header bond
- stretch bond.

Adjustable props include:
- metal props
- packers
- timber toms
- timber wedges.

Adjusted supports:
- ensure the arch centre is level at right angles to the wall face and level across the springing

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RANGE STATEMENT

	line.
Wedge shape bricks include the following common sizes:	• 51mm • 63mm • 69mm.

Measurements and placement include:	• accurate positioning and maintenance of the centreline of the key brick is through the vertical centre line of the arch ensuring:
	  • all bricks are cut and laid to maintain even joints
	  • even joint thickness around the extrados.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4043A Operate a self-erecting tower crane

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to operate a self-erecting tower crane, including planning and preparing for work, conducting operational checks, safely and effectively operating the self-erecting tower crane for a range of tasks including lifting and moving loads, monitoring and shutting down in accordance with designated Australian standards.

Application of the Unit

Application of the unit

This unit may have application in a range of industries, including automotive, defence, forests, maritime, metals and engineering, mining, transport and distribution, in addition to general construction.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operation.	1.1. Applicable ***safety*** (***OHS***), ***licensing***, ***legislative*** and ***organisational requirements*** relevant to operating a self-erecting tower crane are verified and complied with. 1.2. ***Work order*** is reviewed, confirmed and clarified with ***appropriate personnel***. 1.3. Type of operations to be conducted with a ***self-erecting tower crane*** are assessed and prepared. 1.4. ***Equipment*** is selected appropriate to work requirements and checked for operational effectiveness in accordance with manufacturer recommendations. 1.5. Self-erecting tower crane operations are planned in accordance with site procedures. 1.6. ***Environmental protection measures*** are adhered to in accordance with environmental plans and regulations. 1.7. Communication with others is established and maintained in accordance with OHS requirements.
2. Inspect and test self-erecting tower crane.	2.1. Self-erecting tower crane is visually inspected prior to operation for any evidence of damage, structural weakness or interference according to pre-operational safety check procedures and service logbook inspection. 2.2. ***Pre start-up checks*** are carried out on equipment in accordance with manufacturer recommendations and specifications. 2.3. Self-erecting tower crane controls and functions, including manoeuvrability, emergency functions, gear and accessories are checked for serviceability and any faults are rectified or reported. 2.4. Tower functions are checked after start-up and are monitored throughout operation. 2.5. Site ***hazards*** associated with self-erecting tower crane operations are detected and documented, risks assessed and safe operating techniques used to eliminate or control risks.
3. Prepare for erection.	3.1. Self-erecting tower crane is positioned in accordance with work instructions, manufacturer specifications and statutory regulations. 3.2. Ground or base is assessed to ensure it will

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ELEMENT	PERFORMANCE CRITERIA
	withstand crane operation without subsidence, in accordance with engineer specifications.
	3.3. ***Barriers and signage*** are used to isolate the work area in accordance with safe work practices, load shifting requirements and the work plan.
	3.4. Self-erecting tower crane is positioned to ensure a level operating platform in accordance with manufacturer instructions and statutory regulations.
	3.5. Activities are coordinated with ***riggers***, ***doggers*** and other crane operators.
	3.6. Self-erection system is activated to achieve the required height of operation in accordance with manufacturer specifications.
	3.7. Rig is handed over to riggers to complete erection and ***stability*** procedures.
4. Operate self-erecting tower crane.	4.1. Self-erecting tower crane is operated with ***ground controls*** to work instructions and in accordance with company operating procedures and manufacturer specifications.
	4.2. Communication practices associated with lifting and moving loads are conducted in accordance with work site procedures and are confirmed between parties.
	4.3. Start-up and shutdown procedures are performed in accordance with manufacturer specifications and site requirements.
	4.4. ***Weight of load*** is confirmed as complying with crane lifting capacity, operating radius and crane load chart.
	4.5. ***Lifting gear*** is selected, inspected, attached and used in accordance with working load limits and OHS legislation.
	4.6. Crane movements are checked for safe operation and load is prepared for lifting in accordance with crane, dogging and rigging requirements.
	4.7. Load is manoeuvred to position using the control systems to manufacturer specifications and continually monitored throughout its travel, and ***tasks*** are completed effectively.
	4.8. Load is lifted and moved in accordance with the agreed crane schedule and conventional hand and audible signals that meet OHS legislation and work site procedures.
	4.9. Load is constantly monitored to ensure safety to

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ELEMENT	PERFORMANCE CRITERIA
	personnel, load and structural stability, with monitoring systems and alarms immediately acted upon in accordance with site requirements.
5. Shut down and stow self-erecting tower crane.	5.1. Self-erecting tower crane is shut down and stowed using the correct sequence of procedures in accordance with manufacturer recommendations and specifications. 5.2. Routine post-operational checks are carried out in accordance with manufacturer specifications. 5.3. Self-erection system is lowered by activating the recoil procedure or ram in accordance with manufacturer specifications. 5.4. Self-erecting tower crane operations and faults are ***recorded and reported*** to appropriate personnel.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - clarify and confirm work order with appropriate personnel
  - follow instructions
  - participate in on-site meetings
  - report faults and respond appropriately
  - read and interpret:
    - instructions
    - work orders
    - other relevant documentation
  - use a range of communication technologies and equipment
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to:

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REQUIRED SKILLS AND KNOWLEDGE

- document hazards
- record and report faults relating to self-erecting tower crane operations
- comply with legislation, regulations, standards, codes of practice and established safe practices and procedures for conducting self-erecting tower crane operations
- efficiently and safely conduct self-erecting tower crane operations
- inspect work plans (job safety analyses and safe work method statements) in accordance with legislation
- numeracy skills to calculate rated capacity, working load limits and load charts
- use and maintain relevant tools, machinery and equipment
- verify problems and equipment faults and demonstrate appropriate response procedures.

Required knowledge

Required knowledge for this unit is:

- environmental protection requirements relating to the disposal of waste material
- established communication channels and protocols in the workplace
- federal, state and territory OHS legislation, regulations, standards and codes of practice relevant to the full range of processes for conducting self-erecting tower crane operations
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS) and material handling methods
- organisational and site standards, requirements, policies and procedures for conducting self-erecting tower crane operations
- procedures for recording, reporting and maintaining workplace records and information
- remote control operations and indicators
- risk assessment and management
- routine problems encountered with equipment use or adjustment and required corrective actions
- self-erecting tower crane capabilities and gear
- self-erecting tower crane operations and operating techniques
- techniques for calculating rated capacity, working load limits and load charts
- types of tools and equipment, and procedures for their use, operation and maintenance.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction

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with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed by providing evidence that the candidate can safely and efficiently conduct self-erecting tower crane operations according to organisational and regulatory requirements. This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with organisational and site policies and procedures, including quality requirements and state or territory legislation applicable to workplace operations. • comply with OHS and environmental regulations, policies and procedures • communicate effectively and work safely with others in the work area • conduct effective risk assessment and management procedures • complete the raising and lowering of the coil structure or ram • operate a self-erecting tower crane, including all functions to their maximum extension and travel in the lifting and moving of at least three differing load types (including different sizes, shapes, weights and materials) to different locations on the site • conduct pre and post-operational checks of the self-erecting tower crane.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge

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will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- workplace location or simulated workplace
- materials and equipment relevant to self-erecting tower crane operations
- specifications and work instructions.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability

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EVIDENCE GUIDE

and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as disability are a factor
- hazard control
- hazardous materials and substances
- housekeeping
- organisational first aid
- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and

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RANGE STATEMENT

	treatments associated with: • air monitoring equipment • falling objects • man-made structures • obstructions • recently filled trenches • restricted access barriers • safe parking • security from unauthorised access or movement • traffic control • uneven or unstable surfaces or terrain • underground or overhead services • work site visitors and the public • working at heights • working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Licensing requirements include:	• relevant recognition, permit, licence or permission to operate within any state or territory issued by the government regulatory authority of that jurisdiction.
Legislative requirements include:	• award and organisation agreements and relevant industrial arrangements • confidentiality and privacy requirements • environmental issues • equal opportunity • industrial relations and anti-discrimination • OHS issues • relevant industry codes of practice • relevant legislation from all levels of government that affect business operation.
Organisational requirements include legal, organisational and site policy, guidelines and procedures relating to:	• access and equity principles and practices • consultative processes • emergency and evacuation procedures • equipment maintenance and storage procedures • ethical standards • OHS policies

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RANGE STATEMENT

	• own role and responsibility • procedures and programs • quality and continuous improvement processes and standards • quality assurance or procedures manuals • recording and reporting procedures.
Work order includes:	• organisational work specifications and instructions issued by authorised personnel for the operation of a self-erecting tower crane and its respective tasks.
Appropriate personnel includes:	• client • colleague • manager • supervisor • supplier.

Self-erecting tower crane includes:	• cranes with bales mounted in a triangular or nested configuration for transport
	• driven by electric or hydraulic mechanical systems
	• cranes of the telescopic ram type
	• involvement of riggers to:
	  • stabilise the self-erecting tower crane with the use of plates and packing under the footplates to adequately distribute the load, ensuring the bearing capacity of the crane standing is not exceeded
	  • conduct other erection activities, including the boom and counterweights
	• self-erecting systems with:
	  • automatic locking mechanisms
	  • braking systems
	  • operator cabins designed to ascend and descend the erected tower
	  • outriggers
	  • ramps
	  • remote control
	  • self-levelling systems
	  • stabilisers.

Equipment includes:	• self-erecting tower cranes, lifting gear, workboxes and relevant maintenance equipment and may include remote control

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RANGE STATEMENT

	devices (pendant control and radio control) • procedures for equipment lock-out protecting operators and co-workers from accidental injury by isolating the equipment • emergency shutdown and stopping, extinguishing fires, organisational first aid requirements and evacuation.
Environmental protection measures include organisational and project requirements, including:	• clean-up management • dust and noise • vibration • waste management.
Pre start-up checks are conducted to ensure:	• equipment has been set up correctly • gear is fitted accurately • plant is operating to optimum performance and to manufacturer specifications.
Hazards include:	• buildings • chemicals • fires • hazardous materials • movement of equipment, goods or material • structures • traffic • underground or overhead services • uneven or unstable surface or terrain.
Barriers and signage include:	• barrier tape or netting • fencing • specified safety signage • temporary boundaries.
Riggers' role is to include:	• process of fitting and removing booms, cables, spars and counterweights to ensure structural stability and load capacity of self-erecting tower cranes.
Doggers' role is to include:	• provision of directional signals to the crane operator on the position and security of the load.
Stability is to ensure:	• self-erecting tower crane is positioned and secured so as not to topple over during operations.
Ground controls include:	• pendant controls • remote control devices.

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RANGE STATEMENT

Weight of load includes:	• that prescribed by manufacturer as not exceeding the allowable capacity of the self-erecting tower crane.
Lifting gear includes:	• chains • flexible steel wire rope slings • grabs • spreader beams • other slinging equipment.

Tasks include:	• operations, including:
	  • boom up and boom down and operation of attachments
	  • luff movements
	  • outriggers
	  • slew left and right
	  • telescope in and out
	  • trolley in and trolley out
	  • winch up and down in combination
	• service operations that provide for lighting, telecommunications and raised platforms for applications, including:
	  • airports
	  • entertainment
	  • firefighting
	  • harbours
	  • law enforcement
	  • mining
	  • oil and gas exploration
	  • road construction
	  • search and rescue
	  • sports.

Records and reports include:	• conclusions • costs • dangerous occurrences or equipment malfunctions • difficulties or issues faced • environmental issues • hazards • incidents or injuries • maintenance of equipment

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RANGE STATEMENT

- maintenance records
- pro formas
- production reports
- recommendations, including for future work
- results
- self-erecting tower crane operations
- using logbooks.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4044A Operate a tower crane

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency specifies the outcomes required to operate a tower crane, including planning and preparing for work; conducting operational checks; safely and effectively operating the tower crane for a range of tasks, including lifting and moving loads; monitoring; and shutting down in accordance with designated Australian standards.

Application of the Unit

Application of the unit	This unit may have application in a range of industries, including automotive, defence, forests, maritime, metals and engineering, mining, transport and distribution, in addition to general construction.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operation.	1.1. Applicable ***safety*** (***OHS***), ***licensing***, legislative and ***organisational requirements*** relevant to operating a tower crane are verified and complied with. 1.2. ***Work order*** is reviewed, confirmed and clarified with ***appropriate personnel***. 1.3. Type of operations to be conducted with a ***tower crane*** are assessed and prepared. 1.4. ***Equipment*** is selected appropriate to work requirements and checked for operational effectiveness in accordance with manufacturer recommendations. 1.5. Tower crane operations are planned in accordance with site procedures and ***legislative requirements***. 1.6. ***Environmental protection measures*** are adhered to in accordance with environmental plans and regulations. 1.7. Communication with others is established and maintained in accordance with OHS requirements.
2. Inspect and test tower crane.	2.1. Tower crane is visually inspected prior to operation for any evidence of damage, structural weakness or interference according to pre-operational safety check procedures. 2.2. ***Pre start-up checks*** are carried out on equipment in accordance with manufacturer recommendations and specifications. 2.3. Tower crane controls and functions, including manoeuvrability, emergency functions, gear and accessories are checked for serviceability and any faults are rectified or reported. 2.4. Tower functions are checked after start-up, and monitored throughout operation. 2.5. Site ***hazards*** associated with tower crane operations are detected, risks assessed and safe operating techniques used to eliminate or control risks.
3. Operate tower crane.	3.1. ***Barriers and signage*** are used to isolate the work area in accordance with safe work practices and load shifting requirements. 3.2. Tower crane is operated to work instructions in accordance with company operating procedures and manufacturer specifications. 3.3. Communication practices associated with lifting and

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ELEMENT	PERFORMANCE CRITERIA
	moving loads are conducted in accordance with work site procedures and are confirmed between parties.
	3.4. Crane is climbed in accordance with manufacturer specifications and safety regulations.
	3.5. Start-up and shutdown procedures are performed in accordance with manufacturer specifications and site requirements.
	3.6. ***Weight of load*** is confirmed as being within the lifting capacity and operating radius of the crane.
	3.7. ***Lifting gear*** is selected, attached and used in accordance with working load limits and OHS legislation.
	3.8. Crane movements are checked for safe operation and load is prepared for lifting in accordance with crane, ***dogging*** and ***rigging*** requirements.
	3.9. Load is manoeuvred to position using the control systems to manufacturer specifications, continually monitored throughout its travel and ***tasks*** are completed effectively.
	3.10. Load is lifted and moved in accordance with agreed crane schedule and conventional hand and audible signals that meet OHS legislation and work site procedures.
	3.11. Load is constantly monitored to ensure safety to personnel, load and structural stability with monitoring systems and alarms immediately acted upon in accordance with site requirements.
4. Shut down tower crane.	4.1. Tower crane is shut down using the correct sequence of procedures in accordance with manufacturer recommendations and specifications.
	4.2. Routine post-operational checks are carried out in accordance with manufacturer specifications.
	4.3. Tower crane operations and faults are ***recorded and reported*** to the appropriate personnel.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - clarify and confirm work order with appropriate personnel
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - participate in on-site meetings
  - read and interpret:
    - instructions
    - work orders
    - other relevant documentation
  - report faults and respond appropriately
  - use a range of communication technologies and equipment
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to document hazards and record and report faults relating to conducting tower crane operations
- compliance with legislation, regulations, standards, codes of practice and established safe practices and procedures for conducting tower crane operations
- efficiently and safely conduct tower crane operations
- numeracy skills to calculate rated capacity, working load limits and load charts
- use and maintain relevant tools, machinery and equipment
- use appropriate communication and interpersonal techniques with colleagues and others
- verify problems and equipment faults and demonstrate appropriate response procedures.

Required knowledge

Required knowledge for this unit is:

- appropriate mathematical procedures for estimation and measurement
- environmental protection requirements relating to the disposal of waste material
- established communication channels and protocols in the workplace
- federal, and state or territory OHS legislation, regulations, standards and codes of practice relevant to the full range of processes for conducting tower crane operations
- job safety analysis (JSA) and safe work method statements

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REQUIRED SKILLS AND KNOWLEDGE

- material safety data sheets (MSDS) and material handling methods
- organisational and site standards, requirements, policies and procedures for conducting tower crane operations
- procedures for recording, reporting and maintaining workplace records and information
- remote control operations and indicators
- risk assessment and management
- routine problems encountered with equipment use or adjustment and required corrective actions
- techniques for calculating rated capacity, working load limits and load charts
- tower crane capabilities and gear
- tower crane operations and operating techniques
- types of tools and equipment and procedures for their use, operation and maintenance.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed by providing evidence of safely and efficiently conducting tower crane operations according to organisational and regulatory requirements. This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with organisational and site policies and procedures, including quality requirements and state or territory legislation applicable to workplace operations • comply with OHS and environmental regulations, policies and procedures • communicate effectively and work safely with others in the work area • conduct risk assessment and management procedures • operate a tower crane, including all functions (including a multiple lift) to their maximum extension and travel in the lifting and moving of at least three differing load types and sizes to different locations on the site • conduct pre and post-operational checks of the tower crane.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

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EVIDENCE GUIDE

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- workplace location or simulated workplace
- materials and equipment relevant to tower crane operations.

Specifications and work instructions. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a

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EVIDENCE GUIDE

combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as disability are a factor
- hazard control
- hazardous materials and substances
- housekeeping
- organisational first aid
- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - machines

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RANGE STATEMENT

	• man-made structures • obstructions • recently filled trenches • restricted access barriers • safe parking • security from unauthorised access or movement • signage and barricades • surrounding structures • traffic control • underground or overhead services • uneven or unstable surfaces or terrain • work site visitors and the public • working at heights • working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Licensing includes:	• relevant recognition, permit, licence or permission to operate within any state or territory issued by the government regulatory authority of that jurisdiction.
Organisational requirements include:	• access and equity principles and practices • consultative processes • emergency and evacuation procedures • equipment maintenance and storage procedures • ethical standards • legal, organisational and site policy or guidelines • OHS policies • policies and procedures relating to own role and responsibility • procedures and programs • quality and continuous improvement processes and standards • quality assurance or procedures manuals • recording and reporting procedures.
Work order includes:	• organisational work specifications and instructions issued by authorised personnel for

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RANGE STATEMENT

	the operation of a tower crane and its respective tasks.
Appropriate personnel includes:	• client • colleague • manager • supervisor • supplier.

Tower crane:	• includes:
	  • a boom or jib crane mounted on a tower structure that is demountable or permanent and includes horizontal and luffing jib types
	• may include:
	  • height and jib extension
	  • ram luffers
	  • rope luffers and hammerheads (trolley in and trolley out)
	• is generally pre-erected by riggers with use of mobile cranes.

Equipment:	• includes:
	  • lifting gear
	  • tower cranes
	  • workboxes and relevant maintenance equipment
	• may include:
	  • emergency shutdown and stopping
	  • extinguishing fires
	  • organisational first aid requirements and evacuation
	  • procedures for equipment lock-out to protect operators and co-workers from accidental injury by isolating the equipment
	  • remote control devices (pendant control and radio control).

Legislative requirements include:	• award and organisation agreements and relevant industrial arrangements • confidentiality and privacy requirements • environmental issues • equal opportunity • industrial relations and anti-discrimination

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RANGE STATEMENT

	• OHS issues • relevant industry codes of practice • relevant legislation from all levels of government that affect business operation.
Environmental protection measures include organisational and project requirements, including:	• clean-up management • dust and noise • vibration • waste management.
Pre start-up checks ensure:	• equipment has been set up correctly • gear is fitted accurately • plant is operating to optimum performance.
Hazards include:	• buildings • chemicals • fires • goods and materials, including hazardous materials • movement of equipment • structures • traffic • underground or overhead services • uneven or unstable surface or terrain.
Barriers and signage include:	• barrier tape or netting • fencing • temporary boundaries and specified safety signage.
Weight of load includes:	• that prescribed by manufacturer as not exceeding the allowable capacity of the tower crane.
Lifting gear includes:	• chains or slinging equipment • grabs.
Dogging includes:	• provision of directional signals to the crane operator on the position and security of the load.
Rigging includes:	• process of fitting and removing cables and spars to ensure structural stability and load capacity of tower cranes.
Tasks include operations, including:	• attachments • boom up and boom down • luff movements • outriggers

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RANGE STATEMENT

	• slew left and right • telescope in and out • trolley in and trolley out • winch up and down in combination.
Records and reports include:	• conclusions • costs • dangerous occurrences or equipment malfunctions using logbooks • difficulties or issues faced • environmental issues • hazards • incidents or injuries • pro formas • production reports • recommendations and maintenance records • recommendations for future work • results • tower crane operations and maintenance of equipment.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4045A Perform advanced rigging

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to perform advanced rigging, including planning and preparing for work, conducting operational checks, safely and effectively performing advanced rigging activities for a range of tasks including the erection and dismantling of lifting devices, placing and securing hung prefabricated scaffolds, fixing and securing permanent guys, demolition activities, and load distribution and calculation in accordance with designated Australian standards.

A Certificate of Competency or Licence in Intermediate Rigging issued by a state or territory OHS authority is a prerequisite for this unit.

Application of the Unit

Application of the unit

This unit may have application in a range of industries, including civil construction, defence, electro technology, entertainment, maritime and mining, in addition to general construction.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operation.	1.1. Applicable ***safety*** (***OHS***), ***licensing***, ***legislative*** and ***organisational requirements*** relevant to performing advanced rigging are verified and complied with. 1.2. ***Work order*** is reviewed, confirmed and clarified with ***appropriate personnel***. 1.3. Type of operations to be conducted for ***advanced rigging*** are assessed and prepared. 1.4. ***Equipment*** is selected appropriate to work requirements and checked for operational effectiveness in accordance with manufacturer recommendations. 1.5. Advanced rigging operations are planned in accordance with site procedures. 1.6. ***Environmental protection measures*** are adhered to in accordance with environmental plans and regulations. 1.7. Communication with others is established and maintained in accordance with OHS requirements.
2. Select advanced rigging equipment.	2.1. Advanced rigging equipment, resources and material are visually inspected prior to operation for evidence of damage, structural weakness or interference according to pre-operational safety check procedures. 2.2. ***Lifting equipment*** is inspected in accordance with manufacturer recommendations and specifications. 2.3. Lifting equipment verified as inconsistent with manufacturer specifications is labelled, rejected and disposed of to prevent its use in any circumstance. 2.4. ***Lifting devices*** are specified and selected in accordance with job requirements. 2.5. ***Hung prefabricated scaffolding*** is specified and selected in accordance with job requirements. 2.6. ***Permanent guys*** are specified and selected in accordance with job requirements. 2.7. Site ***hazards*** associated with dogging operations are detected, risks are assessed and safe operating techniques are used to eliminate or control risks.
3. Connect equipment.	3.1. Loads are slung to ensure ***encapsulation*** of the whole of load. 3.2. Part loads are slung to ensure full encapsulation of the part load. 3.3. Whole or part loads are slung to protect loads and

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ELEMENT	PERFORMANCE CRITERIA
	secured to prevent uncontrolled movement. 3.4. ***Tag lines*** are attached and used to prevent unnecessary load movement.
4. Move or remove, place and secure loads.	4.1. Load lifting or shifting order is specified to minimise necessity of double lifts. 4.2. Lifting or ***shifting equipment*** is connected to the load. 4.3. Test lift or shift is performed in conjunction with the ***crane*** operator to ensure lift suitability. 4.4. Load is safely moved or removed to the required destination, placed and secured in position to client specifications or job requirements and ***tasks*** are completed effectively. 4.5. Load is constantly monitored to ensure safety to personnel, load and structural stability with monitoring systems and alarms immediately acted upon in accordance with site requirements. 4.6. Load is directed and safe movement coordinated using communications in compliance with recognised work practices.
5. Remove advanced rigging equipment and clean up.	5.1. Lifting or shifting equipment and packing are dismantled, lowered and inspected for wear, and logbook and site records are completed to company requirements. 5.2. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specifications. 5.3. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices. 5.4. Work completion procedures are applied and appropriate personnel is notified that work is finished. 5.5. Advanced rigging operations and faults are ***recorded and reported*** to the appropriate personnel.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - clarify and confirm work order with appropriate personnel
  - participate in on-site meetings
  - read and interpret:
    - instructions
    - work orders
    - other relevant documentation
  - report faults and respond appropriately
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to:
    - document hazards
    - record and report faults
- comply with legislation, regulations, standards, codes of practice and established safe practices and procedures for performing advanced rigging operations
- efficiently and safely perform advanced rigging operations
- numeracy skills to calculate rated capacity and working load limits
- use and maintain relevant tools, machinery and equipment
- verify problems and equipment faults and demonstrate appropriate response procedures.

Required knowledge

Required knowledge for this unit is:

- advanced rigging capabilities and gear
- advanced rigging operations and operating techniques
- crane operations and limitations
- designs and functions of lifting equipment
- environmental protection requirements relating to the disposal of waste material
- established communication channels and protocols in the workplace
- federal, and state or territory OHS legislation, regulations, standards and codes of practice relevant to the full range of processes for performing advanced rigging operations
- job safety analysis (JSA) and safe work method statements

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REQUIRED SKILLS AND KNOWLEDGE

- material safety data sheets (MSDS) and material handling methods
- organisational and site standards, requirements, policies and procedures for performing advanced rigging operations
- procedures for recording, reporting and maintaining workplace records and information
- rated capacity and working load limit tags
- risk assessment and management
- safe working at heights and fall arrest
- techniques for calculating rated capacity and working load limits
- types of tools and equipment and procedures for their use, operation and maintenance
- typical routine problems encountered in the process and with equipment and adjustments required for correction
- weather and ground considerations.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by providing evidence of safely and efficiently performing advanced rigging according to organisational and regulatory requirements.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- comply with organisational and site policies and procedures including quality requirements and state or territory legislation applicable to workplace operations
- comply with OHS and environmental regulations, policies and procedures
- communicate effectively and work safely with others in the work area
- conduct risk assessment and management procedures
- erect and dismantle at least one lattice boom crane and fly with correct rigging and slinging techniques
- set up, erect, test, operate and dismantle a hoist, flying fox, gin pole and hung prefabricated scaffold
- conduct advanced rigging operations for a demolition project, including the deconstruction of major construction components
- apply both single and dual lifting techniques
- conduct pre and post-operational checks of advanced rigging equipment.

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EVIDENCE GUIDE

Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • workplace location or simulated workplace • materials and equipment relevant to performing advanced rigging • specifications and work instructions. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and

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EVIDENCE GUIDE

separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as disability are a factor
- hazard control
- hazardous materials and substances
- housekeeping
- organisational first aid
- personal protective equipment (PPE)

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RANGE STATEMENT

	prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • machines
	  • man-made structures
	  • obstructions
	  • recently filled trenches
	  • restricted access barriers
	  • safe parking
	  • security from unauthorised access or movement
	  • signage and barricades
	  • surrounding structures
	  • traffic control
	  • underground or overhead services
	  • uneven or unstable surfaces or terrain
	  • work site visitors and the public
	  • working at heights
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Licensing includes:	• relevant recognition, permit, licence or permission to operate within any state or territory issued by the government regulatory authority of that jurisdiction.
Legislative requirements include:	• award and organisation agreements and relevant industrial arrangements • confidentiality and privacy requirements • environmental issues • equal opportunity • industrial relations and anti-discrimination • OHS issues • relevant industry codes of practice • relevant legislation from all levels of government that affect business operation.
Organisational requirements	• access and equity principles and practices

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RANGE STATEMENT

include legal, organisational and site policies, guidelines and procedures relating to:	• consultative processes • emergency and evacuation procedures • equipment maintenance and storage procedures • ethical standards • OHS policies • own role and responsibility • procedures and programs • quality and continuous improvement processes and standards • quality assurance or procedures manuals • recording and reporting procedures.
Work order includes:	• organisational work specifications and instructions issued by authorised personnel for the performing of advanced rigging and its respective tasks.
Appropriate personnel includes:	• client • colleague • manager • supervisor • supplier.
Advanced rigging includes work involving the use of mechanical load shifting equipment and associated gear:	• to set up and dismantle cranes and hoists and demolition activities • to ensure the stability of those members • to move, place or secure a load using plant, equipment or members of a building or structure.

Equipment includes:	• advanced rigging lifting gear, including:
	  • angle grinders
	  • automatic levels
	  • chains
	  • drifts
	  • elevated work platforms
	  • explosive power tools
	  • flexible steel wire ropes
	  • hammers
	  • laser levels
	  • natural or synthetic fibre
	  • oxy-acetylene equipment
	  • pneumatic tools
	  • podgers

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RANGE STATEMENT

	• rattle guns
	• relevant maintenance equipment
	• shifting spanners
	• skids
	• sledgehammers
	• spanners
	• spirit levels
	• tape measures
	• water levelling equipment
	• wedges
	• wrenches
	• procedures:
	  • for equipment lock-out protecting operators and co-workers from accidental injury by isolating the equipment
	  • emergency shutdown and stopping
	  • extinguishing fires
	  • organisational first aid requirements
	  • evacuation.

Environmental protection measures include organisational and project requirements, including:	• clean-up management • noise and dust • waste management.

Lifting equipment:	• includes:
	  • air winches
	  • chain blocks
	  • chain winches
	  • come alongs
	  • hand operated creeper winches
	  • L bolts
	  • jacks
	  • pulley blocks
	  • shackles
	  • trolleys
	  • turn buckles
	• may include:
	  • electric chain motors
	  • lifting clutches and snatch blocks

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RANGE STATEMENT

	• lifting lugs • rigging screws.
Lifting devices include:	• cantilevered crane loading platforms • hoists • mast climbers.
Hung prefabricated scaffolding includes:	• sections or componentry of suspended scaffolds.
Permanent guys include:	• flying foxes and cable ways • gin poles • guyed derricks • shear legs.
Hazards include:	• buildings • chemicals • fires • hazardous materials • movement of equipment, goods or material • structures • traffic • underground or overhead services • uneven or unstable surface or terrain.
Encapsulation is to ensure:	• that the part load or whole load is fully contained within the slinging equipment.
Tag lines include:	• lines to assist the directional guidance of the load.
Shifting equipment includes:	• hydraulic jacks • rails • skates • winches.
Cranes include:	• bridge and gantry cranes • city cranes • derrick cranes • fixed cranes • hydraulic mobile cranes • lattice boom mobile cranes • non-slewing cranes • portal cranes • slewing cranes • tower cranes, including self-erecting tower cranes.

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RANGE STATEMENT

Tasks include:	• demolition activities • erection and dismantling of lifting devices • fixing and securing of permanent guys • load distribution and calculation of loads • placing and securing of hung scaffolds and prefabricated suspended scaffolds.
Records and reports include:	• advanced rigging operations and maintenance of equipment • conclusions • costs • dangerous occurrences or equipment malfunctions using logbooks • difficulties or issues faced • environmental issues • hazards • incidents or injuries • pro formas • production reports • recommendations and maintenance records • recommendations for future work • results.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4046A Erect and dismantle advanced scaffolding

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to erect and dismantle advanced scaffolding, including planning and preparation for work, conducting operational checks, safely and effectively erecting and dismantling advanced scaffolding activities for a range of tasks, including erecting and dismantling hung scaffolds, suspended scaffolds, and tube and coupler scaffolding systems to provide work platforms, edge protection and access ways in accordance with designated Australian standards.

A Certificate of Competency/Licence in Intermediate Scaffolding issued by a state or territory OHS authority is a prerequisite for this unit.

Application of the Unit

Application of the unit

This unit may have application in a range of industries, including civil construction, defence, electro technology, entertainment, maritime and mining, in addition to general construction.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operation.	1.1. Applicable ***safety*** (***OHS***), licensing, ***legislative*** and ***organisational requirements*** relevant to erecting and dismantling advanced scaffolding are verified and complied with. 1.2. ***Work order*** is reviewed, confirmed and clarified with ***appropriate personnel***. 1.3. Type of operations to be conducted for ***advanced scaffolding*** are assessed and prepared. 1.4. ***Equipment*** is selected appropriate to work requirements and checked for operational effectiveness in accordance with manufacturer recommendations. 1.5. Advanced scaffolding operations are planned in accordance with site procedures. 1.6. ***Environmental protection measures*** are adhered to in accordance with environmental plans and regulations. 1.7. Communication with others is established and maintained in accordance with OHS requirements.
2. Erect scaffolding.	2.1. Purpose for scaffolding is confirmed and associated work ***tasks*** are specified. 2.2. Design loading on scaffold and supporting structure is verified using load tables in accordance with appropriate limits, standards and specifications. 2.3. Site access and egress routes are verified. 2.4. Scaffolding and components are selected and inspected with damaged components isolated, labelled, tagged and rejected. 2.5. ***Footings*** are prepared in accordance with regulations, legislation, codes of practice, manufacturer specifications and engineer's instructions. 2.6. Scaffolding is set out and ***erected*** in accordance with regulatory requirements and manufacturer specifications. 2.7. ***Lifting devices*** are assembled and erected in accordance with manufacturer specifications and regulatory requirements. 2.8. Site ***hazards*** associated with scaffolding operations are detected, risks assessed and safe operating techniques used to eliminate or control risks.

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ELEMENT	PERFORMANCE CRITERIA
3. Erect ancillary scaffolding equipment.	3.1. ***Fall protection*** is erected and installed in accordance with job specifications and regulatory requirements. 3.2. ***Cantilevered hoist***, with a lifting device working load limit not exceeding 500kg, is erected and checked for serviceability.
4. Inspect, repair and alter erected scaffolding.	4.1. Erected hung or suspended scaffolding and tube and coupler scaffolding are inspected for damage, corrosion, wear and compatibility prior to use. 4.2. Faulty components are isolated, labeled, tagged, rejected or replaced immediately. 4.3. Existing use of scaffolding is checked against original design to be in accordance with regulations and specifications. 4.4. Scaffolding stability is inspected and confirmed in accordance with OHS regulations. 4.5. ***Alterations and repairs*** are carried out on specified equipment or where faults are discovered to ensure regulatory compliance. 4.6. Inspection log and ***handover*** are completed and dated.
5. Dismantle scaffolding and clean up.	5.1. Scaffolding is isolated and appropriately signed and barricaded to ensure safe dismantling. 5.2. Scaffolding is dismantled using reverse procedure as for erection. 5.3. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specifications. 5.4. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices. 5.5. Work completion procedures are applied and appropriate personnel is notified that work is finished. 5.6. Advanced scaffolding operations and faults are ***recorded and reported*** to appropriate personnel.

Required Skills and Knowledge

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - clarify and confirm work order with appropriate personnel
  - follow instructions
  - participate in on-site meetings
  - read and interpret:
    - instructions
    - work orders
    - other relevant documentation
  - report faults and respond appropriately
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to:
    - complete inspection log
    - document hazards
    - record and report faults
- compliance with legislation, regulations, standards, codes of practice and established safe practices and procedures for erecting and dismantling advanced scaffolding
- efficiently and safely erect and dismantle advanced scaffolding
- numeracy skills to calculate rated capacity and working load limits
- use and maintain relevant tools, machinery and equipment.

Required knowledge

Required knowledge for this unit is:

- advanced scaffolding capabilities and gear
- designs and functions of equipment
- environmental protection requirements relating to the disposal of waste material
- established communication channels and protocols in the workplace
- federal, and state or territory OHS legislation, regulations, standards and codes of practice relevant to the full range of processes for erecting and dismantling advanced scaffolding
- job safety analysis (JSA) and safe work method statements
- lifting devices and capabilities

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REQUIRED SKILLS AND KNOWLEDGE

- material safety data sheets (MSDS) and material handling methods
- organisational and site standards, requirements, policies and procedures for erecting and dismantling advanced scaffolding
- procedures for recording, reporting and maintaining workplace records and information
- rated capacity and working load limit tags
- risk assessment and management
- safe working at heights and fall arrest
- types of tools and equipment, and procedures for their use, operation and maintenance
- typical routine problems encountered in the process and with equipment and adjustments required for correction
- weather considerations.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed by providing evidence of safely and efficiently erecting and dismantling advanced scaffolding according to organisational and regulatory requirements. This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with organisational and site policies and procedures, including quality requirements and state or territory legislation applicable to workplace operations

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EVIDENCE GUIDE

- comply with OHS and environmental regulations, policies and procedures
- communicate effectively and work safely with others in the work area
- conduct risk assessment and management procedures
- complete the planning, erection and dismantling of suspended and hung scaffold system, in accordance with JSA and safe work method statements and regulations, including a minimum of:
  - two bays hung
  - support suspension system for a single stage
  - edge protection
- conduct pre and post-operational checks of advanced scaffolding.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- workplace location or simulated workplace
- materials and equipment relevant to erecting and dismantling advanced scaffolding
- specifications and work instructions.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or

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EVIDENCE GUIDE

simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application

- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

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RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as disability are a factor
- hazard control
- hazardous materials and substances
- housekeeping
- organisational first aid
- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - machines
  - man-made structures
  - obstructions
  - recently filled trenches
  - restricted access barriers
  - safe parking
  - security from unauthorised access or movement
  - signage and barricades
  - surrounding structures
  - traffic control
  - underground or overhead services
  - uneven or unstable surfaces or terrain
  - work site visitors and the public
  - working at heights
  - working in proximity to others
- use of firefighting equipment

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RANGE STATEMENT

	• use of tools and equipment • workplace environmental requirements and safety.
Legislative requirements include:	• award and organisation agreements and relevant industrial arrangements • confidentiality and privacy requirements • environmental issues • equal opportunity • industrial relations and anti-discrimination • OHS issues • relevant industry codes of practice • relevant legislation from all levels of government that affect business operation.
Organisational requirements include legal, organisational and site policy, guidelines and procedures relating to:	• access and equity principles and practices • consultative processes • emergency and evacuation procedures • equipment maintenance and storage procedures • ethical standards • OHS policies • own role and responsibility • procedures and programs • quality and continuous improvement processes and standards • quality assurance or procedures manuals • recording and reporting procedures.
Work order includes:	• organisational work specifications and instructions issued by authorised personnel for erecting and dismantling advanced scaffolding and respective tasks.
Appropriate personnel includes:	• client • colleague • manager • supervisor • supplier.

Advanced scaffolding:	• includes:
	  • cantilevered and spurred scaffolding
	  • cantilevered crane loading platforms
	  • couplers
	  • hung scaffolds (scaffold hanging from tubes, wire ropes and chains)

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RANGE STATEMENT

- sloping platforms
- suspended scaffolds (swing stages, boatswain chairs, multiple layer, single layer and articulated layer supported by wire ropes and may include maintenance units)
- tube and fitting scaffolding systems with mast climbers, cantilevers, barrow ramps, spurs, longitudinal and transverse braces, random planks and putlogs

- may include:
  - modular scaffolding.

Equipment:

- includes:
  - bracket scaffolds (tank and formwork)
  - cantilevered hoists (materials only with maximum working load limit not exceeding 500kg)
  - couplers
  - fibre ropes
  - gin wheels
  - hung scaffolds
  - manual and/or motorised winches
  - modular stages (aluminium or steel)
  - safety nets
  - static lines
  - suspended scaffolds
  - tube and fitting scaffolding
- may include:
  - adjustable base plates
  - box spanners
  - braces
  - cutters
  - forklifts
  - guardrails
  - hammer drills
  - hammers
  - ledgers
  - mast climbers
  - materials hoists

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RANGE STATEMENT

	• mesh guards • mid rails • pallet trolleys • perimeter safety screens and shutters • podgers hammers • prefabricated components • relevant maintenance equipment • scaffold belts • scaffolding planks (including laminated) • shovels • sledgehammers • spanners • spirit levels • stairs or ladders • standards • steel and aluminium tubes • tape measures • torpedo levels • transoms • wheelbarrows • wire nips • wrenches.
Environmental protection measures include organisational and project requirements, including:	• clean-up management • noise and dust • waste management.
Tasks include:	• access ways • edge protection • falsework • grandstands • provision of work platforms • stages and covered walkways.
Footings include:	• review of JSA and safe work method statements to determine the bearing capacity of ground or working surfaces • components, including sole boards or base plates.
Erection includes:	• levelling • placement

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RANGE STATEMENT

	• sequencing • squaring • tying to a structure.
Lifting devices include:	• manual or motorised winches • mast climbers cantilevered hoists and gin wheels.
Hazards include:	• buildings and structures • chemicals and hazardous materials • fires • movement of equipment, goods or material • traffic • underground or overhead services • uneven or unstable surface or terrain.

Fall protection:	• includes:
	  • a full body rescue harness connected to a fall line and working platform edge protection while the scaffold is erected
	• static lines include:
	  • static lines that can sometimes be used to form part of a travel restraint system that are horizontal lines, generally constructed from steel wire rope, to which lanyards are usually connected
	• static lines may be used:
	  • as part of a travel restraint system where access is required close to an unprotected edge, or on a sloping or slippery surface.

Cantilevered hoist includes:	• that with a working load limit not exceeding 500kg which only moves materials and is erected subsequent to the scaffold.
Alterations and repairs may be required due to:	• accidents • misuse • process changes • storm damage.
Handover includes:	• signing of the handover certificate which certifies that scaffold is ready for service and complies with Australian standards in its entirety.
Records and reports include:	• advanced scaffolding operations and maintenance of equipment • costs

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RANGE STATEMENT

- dangerous occurrences or equipment malfunctions using logbooks, pro formas, production reports and maintenance records
- difficulties or issues faced
- environmental issues
- hazards
- incidents or injuries
- logbooks, pro formas, production reports and maintenance records recording dangerous occurrences or equipment malfunctions
- recommendations for future work
- results.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4047A Quality assure fire-rated lining systems

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to quality assure fire-rated lining systems, including walls, ceilings, structures, openings and penetrations. The unit covers planning and preparation for the work, identification of authorised installation requirements, and inspection and certification that all materials and installation techniques comply with authorised standards.

Application of the Unit

Application of the unit

This unit of competency supports the needs of experienced tradespersons with a responsibility for certifying that lining systems including walls, ceilings, structures, openings and penetrations comply with authorised standards.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for work.	1.1. Work instructions, including plans, specifications, quality requirements and operational details for context of ***fire-rated systems*** are obtained, confirmed and applied. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement. 1.5. ***Environmental protection requirements*** for the project are identified and applied in accordance with environmental plans and regulatory obligations.
2. Identify authorised installation materials and techniques.	2.1. ***Authorised materials*** and installation techniques for walls, partitions, ceilings, openings and penetrations are identified and confirmed from the plan, ***relevant standards and codes*** and manufacturer specifications. 2.2. Authorised materials and installation techniques for air handling, structural encasement and fire escape systems are identified and confirmed from the plan, relevant standards and codes and manufacturer specifications. 2.3. Most suitable system is selected to meet job specifications.
3. Inspect for compliance with authorised standards.	3.1. Installation is progressively inspected to confirm that materials and work comply with the authorised plan and standards and rigidly follow the test and/or sponsored investigation documents. 3.2. Fire rating, including resistance levels and resistance to incipient spread of fire, is confirmed. 3.3. At each stage of installation, ***walls***, ***ceilings***, ***openings***, ***penetrations*** and ***other special needs*** are inspected and confirmed as being compliant. 3.4. Steel componentry and ***fastener*** loadings are inspected and confirmed as being compliant.
4. Record and report the results of inspections.	4.1. Results of inspections, including certification, are completed in accordance with authorised procedures. 4.2. Inspection findings, including non-conformance

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ELEMENT	PERFORMANCE CRITERIA
	sheets, are completed and reported to ***appropriate authority***.
	4.3. Feedback and advice are provided at the work site in accordance with authorised procedures and industry practice.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret:
    - codes and standards
    - documentation from a variety of sources
    - plans, specifications and drawings
  - report faults
  - provide feedback and advice
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to record and report results of inspections
- numeracy skills to apply measurements and calculations
- organisational skills, including the ability to plan for and set out work.

Required knowledge

Required knowledge for this unit is:

- Building Code of Australia (BCA) and Australian standards related to fire-rated lining systems
- fire technology, combustion theory and terminology relevant to the inspection of fire-rated systems
- methods for ensuring compliance with incipient spread of flame requirements
- quality systems, including inspection, compliance and reporting or recording requirements

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REQUIRED SKILLS AND KNOWLEDGE

- range of materials commonly used in the installation of fire-rated lining systems
- regulatory/legislative requirements pertaining to installation of fire-rated systems
- safe work procedures related to the inspection of fire-rated systems
- types, specifications and installation techniques for fire-rated ceiling systems related to direct fix, furred, suspended and spanning types
- types, specifications and installation techniques for fire-rated wall systems related to steel stud and timber stud walls, shaft walls and timber joists
- types, specifications and installation techniques for openings, penetrations, air handling, structural encasement and fire escape systems.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by inspecting a total fire-rated system and compiling a detailed report, or by selecting a total fire-rated system which complies with all codes and standards.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- inspect and report on, or select, a total fire-rated system that complies with all codes and standards and covers, at a minimum, a commercial multi-floor site involving compartmentation, plant rooms, access ladders, escalators, lifts, shafts, columns and beams
- communicate effectively and work safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory

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EVIDENCE GUIDE

or Australian standards' requirements.

Resource implications for assessment include:

- workplace location or simulated workplace
- materials relevant to the quality assurance of fire-rated lining systems
- tools and equipment appropriate to the quality assurance of fire-rated lining systems
- realistic activities covering the mandatory task requirements
- specifications, plans, building codes, Australian standards and work instructions.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the

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point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Fire-rated systems include:

- all fire systems are to be certified in a National Association of Testing Authorities (NATA) approved laboratory
- quality assurance of fire-rated lining systems covers walls, ceilings, openings, penetrations, air handling, structural encasement, escape systems, mechanical service shafts and relief joints
- quality assurance processes are to include detail of responsibilities, types of certification and essential aspects of inspection, recording and reporting procedures
- worksheets are to include work area sheets, inspection plans and non-conformance sheets or

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RANGE STATEMENT

	equivalent
	• fire technology includes:
	  • effect and movement of smoke and combustion products
	  • fire triangle
	  • flash over
	  • fire resistance levels and resistance to incipient spread of fire
	  • char factors (timber framing)
	• fire resistance level (FRL) covers the grading period in minutes determined in accordance with the specification for structural adequacy, integrity and insulation
	• resistance to incipient spread of fire (RISF) covers the ability of a ceiling membrane to insulate the space between the ceiling and the roof, or ceiling and floor above, to limit the temperature rise of combustibles in this space during the standard fire test to 180C above the initial temperature, expressed in terms of 30, 60, 90 or 120 minutes resistance.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as disability are a factor
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • lighting
	  • power sources and leads
	  • treatments associated with manual handling
	  • trip hazards
	  • working at heights

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RANGE STATEMENT

	• working in confined spaces • working in proximity to others • work site visitors and the public • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• inspection support tools • measuring equipment.
Environmental protection requirements include:	• acoustic conformance • waste management.

Authorised materials include:	• fire compliant steel furring channel and suspension components
	• fire grade metal studs and track
	• fire grade plasterboard sheeting
	• fire sealants:
	  • base compound coats
	  • finishing coats
	  • perforated paper tapes
	  • vermiculite or equivalent product.

Relevant standards and codes include:	• BCA • Australian standards AS1530, 1684 and 2785 • documents detailing the responsibilities and authorities in relation to design, installation and supervision of fire-rated lining systems; they define and explain fire-rated protection, the principles of compartmentation, fire resistance levels, standard fire tests and the dangers of incompatible mix and match solutions.

Walls include:	• acoustic capabilities:
	  • double wall advantages for impact sound resistance
	  • flanking
	  • impact of live and/or dead slab
	  • loads deflection
	  • staggered stud
	  • thermal expansion of stud in fire rated partitions
	  • weighted sound reduction index (RW)
	• fire rated wall systems:

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RANGE STATEMENT

- chase walls
- D-stud walls
- exterior walls
- partition walls
- shaft walls
- staggered stud partitions

- load and non-load bearing timber and steel types and related acoustic systems and components
- partitions and components:
  - column and beam
  - exterior
  - high performance wall
  - inter-tenancy
  - shaft.

Ceilings include:

- direct fix, furred and suspended ceilings
- impact of excessive moisture on fire-rated ceiling materials
- methods of ensuring compliance with incipient spread of fire requirements.

Openings include:

- fire doors (steel and timber framed)
- local strengthening of walls
- rating and fitting of windows hatches and appropriate glass
- treatment of door heads
- types of fire doors, which may include single hinged, double hinged and sliding
- types of fire-rated glass, which may include glaze, borosilicate drawn and heat-treated, clear ceramic and wire glass
- types of hatches, which may include those tested for vertical or horizontal positioning.

Penetrations:

- services include:
  - ducts for power and heating or cooling systems
  - metal and polyvinyl chloride (PVC) plumbing in groups or singles
  - power outlets
- types of service penetrations include:
  - baffles

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RANGE STATEMENT

	• encasement/enclosures and blocking systems • fire-rated box • springs • system integrity maintenance includes: • board • collars • impregnated foams • mastic • mortar • pillows • use of tested and approved intumescent seals.
Other special needs include:	• fire escape systems, including escalators, fire tunnels and stairways • fire-rated air handling systems, including fire dampers, direct protection and insulation • fire-rated structural member encasement, which may be timber, steel or concrete and may be void or require filling.
Fasteners include:	• 30mm, 40mm or 50mm D type screws • 30mm S type screws • 30mm and 40mm L type screws • 30mm and 45mm W type screws • 30 mm, 40 mm, 50mm or 60mm plasterboard nails • metal masonry anchors • wafer head screws.
Appropriate authority includes:	• statutory/regulatory authorities, including federal, state and local authorities administering the applicable Acts, regulations and codes of practice.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4048A Apply building codes and standards to the construction process for swimming pools and spas

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to access, interpret and apply relevant building codes and standards applicable to the construction processes of swimming pools and spas. To successfully plan and build indoor or outdoor permanent swimming pools and spas it is essential to understand the purpose and content of the Building Code of Australia (BCA) and be able to interpret other relevant standards and codes related to the building process.

Application of the Unit

Application of the unit

This unit of competency supports swimming pool and spa builders, site managers and related construction industry professionals responsible for ensuring compliance with building codes and standards in the construction industry.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Access and interpret relevant code and standard requirements.	1.1. Relevant performance requirements from the BCA that apply to individual swimming pool and spa installations are identified. 1.2. Requirements of relevant BCA deemed-to-satisfy (DTS) provisions are determined. 1.3. Requirements of relevant Australian standards referenced in the BCA are accessed and interpreted accordingly.
2. Classify the swimming pool and spa to be built.	2.1. Intended use and site arrangement of swimming pool and spa are determined. 2.2. BCA criteria to determine the defined classification are applied.
3. Analyse and apply a range of solutions to a construction problem for compliance with the BCA.	3.1. Range of criteria that will ensure swimming pool and/or spa construction methods comply with the performance requirements of the BCA is determined. 3.2. Alternative solutions to a design or construction problem that will comply with BCA requirements are discussed with the clients and proposed in accordance with company policies and procedures. 3.3. Performance-based solutions are identified and documented in accordance with BCA requirements. 3.4. ***Assessment methods*** referenced in the BCA to determine whether a building solution complies with ***performance requirements*** or DTS provision of the BCA are analysed and applied. 3.5. Relevant documentation is identified and completed in accordance with BCA requirements.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - enable clear and direct communication, using questioning to identify and

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REQUIRED SKILLS AND KNOWLEDGE

confirm requirements, share information, listen and understand

- discuss and propose alternative solutions
- read and interpret:
  - documentation from a variety of sources, including BCA and referenced documents
  - specifications and drawings
- use and interpret non-verbal communication
- use language and concepts appropriate to cultural differences
- written skills to complete documentation in accordance with BCA requirements
- numeracy skills to apply mathematical information included in building codes and standards.

Required knowledge

Required knowledge for this unit is:

- understanding of the BCA relating to:
  - basic design principles and the behaviour of structures under stress, strain, compression, bending or combined actions
  - BCA performance hierarchy
  - definitions and common technical terms or usage specified under general provisions of BCA
  - general nature of materials and the effects of performance
  - interpretation and analysis of working drawings and specifications
  - relevance of Australian standards and relevant ancillary provisions in state and territory building legislation
  - relevant legislative and OHS requirements, codes and practices
  - swimming pool design and construction.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed by planning a swimming and spa that meets applicable building codes and standards. This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with organisational quality procedures and processes • apply and interpret relevant swimming pool and spa building documentation and codes • accurately apply BCA performance requirements relating to the design and construction of swimming pools and spas • demonstrate understanding of some assessment methods available to determine compliance with the BCA • identify swimming pool and spa faults and problems and proposed action to rectify.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • access to BCA and relevant documents referenced in the BCA

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EVIDENCE GUIDE

- access to relevant legislation
- project documentation, including design brief, design drawings, specifications, construction schedules and other supporting documents
- research resources, including product information and data
- relevant computer software package and suitable hardware.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

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EVIDENCE GUIDE

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Assessment methods include:

- comparison with BCA DTS provisions
- evidence of suitability as described in the BCA
- expert judgement as defined in the BCA
- verification method as defined in the BCA.

Performance requirements include:

- those contained within other legislation applicable to a specific project
- performance requirements of the BCA determined to be relevant to a specific project
- performance-based contractual requirements that must be fulfilled by any party.

Unit Sector(s)

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Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4049A Apply structural principles to construction of swimming pools and spas

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency specifies the outcomes required to apply structural principles to indoor and outdoor permanent swimming pool and spa building using conventional methods. The unit addresses those structures classified by the Building Code of Australia (BCA).

Application of the Unit

Application of the unit	This unit of competency supports the needs of builders, site managers, forepersons and other managers in the building and construction industry responsible for overseeing and managing the building of swimming pools and spas.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Apply structural principles to the planning of swimming pool and spa building.	1.1. Main ***structural principles*** that apply to the building of a swimming pool or spa are identified. 1.2. Structural performance of a swimming pool or spa is described in terms of the effect of the section properties of various materials. 1.3. Structural performance characteristics of swimming pool and spa shells in a range of materials are explained and applied to the planning of the construction work. 1.4. Demolition of existing structures is coordinated in accordance with legislative and planning requirements and safe work practices.
2. Analyse and plan for the structural integrity of indoor and outdoor permanent swimming pools and spas.	2.1. Relevant ***industry professionals*** are consulted as required to provide advice regarding the design process and structural integrity of the proposed swimming pool or spa. 2.2. Collect and analyse ***project documentation*** to assist in the analysis of plans and specifications. 2.3. Project documentation is analysed for compliance with the BCA requirements for earthquake environments. 2.4. New and emerging building technologies are assessed for application to the construction process and their compliance with BCA requirements and Australian standards. 2.5. Pre-commencement site inspection is conducted to confirm analysis.
3. Plan, coordinate and manage the excavation of swimming pool and/or spa site.	3.1. Excavation is set out in accordance with the building's plans. 3.2. Structural integrity of the excavation specified in the building's plan is assessed for compliance with relevant codes and accepted industry construction principles. 3.3. Damp coursing and provision of termite barriers and other relevant techniques are planned, implemented and checked in accordance with codes, standards and industry practice.
4. Plan, coordinate and manage the building of the structural and non-structural	4.1. Technical construction principles and performance of ***materials*** used in the construction are identified and analysed in the planning of the building and construction project.

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ELEMENT	PERFORMANCE CRITERIA
swimming pool and/or spa shell.	4.2. Application of bracing requirements, tie-downs, tolerances, allowances and fixing, and installation of components are planned, implemented and checked for compliance with manufacturer specifications and relevant Australian standards and codes.
5. Plan, coordinate and manage the finishing and water integrity of swimming pool and/or spa structure.	5.1. Installation of the finishing materials as specified in the building's plan is supervised and checked for compliance with standards and accepted industry construction principles.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- apply Australian standards and codes and manufacturer specifications
- apply BCA structural principles to swimming pools and spas
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - consult with industry professionals
  - read and interpret project documentation
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- identify and analyse relevant information
- select structural members based on project or specification requirements
- work safely to OHS regulations and site requirements.

Required knowledge

Required knowledge for this unit is:

- building and construction industry contracts
- relevant state or territory building and construction codes, standards and government regulations applying to swimming pools and spas
- underlying mathematics related to structural analysis

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REQUIRED SKILLS AND KNOWLEDGE

- workplace safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed by application of appropriate structural principles to construction of a swimming pool and spa. This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • assess the structural integrity of a variety of swimming pool and spa structures • apply the structural principles behind the safe erection and demolition of a swimming pool or spa • apply technical construction principles to the appropriate selection, integration and building in of construction elements and components • coordinate, plan, implement and check the building of a swimming pool and/or spa.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • documentation that should normally be available in either a building or construction office • relevant codes, standards and government regulations

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EVIDENCE GUIDE

- office equipment, including calculators, photocopiers and telephone systems
- computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies
- a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature
- a suitable work area appropriate to the construction process.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete

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EVIDENCE GUIDE

confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Structural principles include:

- behaviour of structural materials
- loads and loading
- performance of beams
- section properties
- solution of force systems.

Industry professionals include:

- architects
- draftspersons
- engineers
- quantity surveyors
- surveyors.

Project documentation includes:

- building approval plans
- contract plans
- design and specifications, including engineer's

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RANGE STATEMENT

	design and specifications • original contour survey plans • registered plans • site plans • soils investigation reports.
Materials typically used include:	• concrete • concrete block • fibreglass • reinforcing steel.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4050A Select, procure and store construction materials for swimming pools and spa projects

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to supervise the systems through which materials are typically selected, acquired and stored on site for projects described by the Building Code of Australia (BCA) as construction of indoor and outdoor permanent swimming pools and spas. It ensures the delivery to the site of materials that meet contract specifications and service requirements.

Application of the Unit

Application of the unit

This unit of competency supports builders, related construction industry professionals and managers within building and construction firms responsible for supervising and applying quality standards to the selection of construction materials. To achieve the outcomes for this unit, knowledge of relevant building construction materials and technologies, environmental effects on materials and evaluation procedures is required.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and evaluate the properties of swimming pool and spa building materials.	1.1. Suitability of ***materials*** commonly used in the region for swimming pools and spas is identified for a given building system. 1.2. Properties of materials, their quality and the compatibility and non-compatibility of different materials are identified. 1.3. Environmental impacts of different materials are identified. 1.4. Impact of allowable tolerances on the conversion of naturally occurring materials is identified. 1.5. Tolerances for installing materials are identified and checked in regard to the nature of the work being performed and the requirements of the Australian standards and BCA.
2. Ensure suitable materials are selected for application.	2.1. Materials that are structurally adequate and appropriate for the building system specified in the contract are ***tested***. 2.2. Materials are selected for safety and ***suitability*** to the application, durability, serviceability, cost effectiveness and compliance with Australian standards. 2.3. Short and long-term degradation of materials is considered in relation to the swimming pool and/or spa's proposed life cycle. 2.4. Alternative materials are evaluated and selected if specified materials are unavailable or unsuitable. 2.5. Selection of materials for use is finalised in accordance with contractual requirements and in consultation with relevant professionals and the client.
3. Supervise the acceptance, safe handling and storage of materials on site.	3.1. Limitations and effects of transportation on materials and components are determined and action is taken in the case of potentially damaging circumstances. 3.2. ***Materials are handled correctly and safely*** on site using appropriate equipment and safe work practices. 3.3. Materials are stored in accordance with manufacturer specifications and in compliance with relevant Australian standards. 3.4. Processes are implemented for inspecting all materials delivered on site for naturally occurring and/or manufactured defects before installation.

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ELEMENT	PERFORMANCE CRITERIA
	3.5. Personnel are aware of actions to be taken in the case of defects caused by incorrect installation, application or placement.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- analysis and report preparation
- application of safe work practices and materials handling
- basic supervision of construction work teams
- communication skills to:
  - communicate with manufacturers and suppliers of materials
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - consult relevant professionals and the client
  - provide advice and information to regulatory authorities
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- develop and manage standardised processes
- apply safe work practices and materials handling.

Required knowledge

Required knowledge for this unit is:

- alternative materials
- BCA
- construction and contracting equipment and its use
- construction supply processes
- environmental effects on various swimming pool and spa construction materials
- relevant Australian standards
- swimming pool and spa construction materials and technologies

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REQUIRED SKILLS AND KNOWLEDGE

- relevant state or territory building and construction codes, standards and regulations, including:
  - AS1926.1-1993 Swimming pool safety - Fencing for swimming pools
  - AS1926.2-1995 Swimming pool safety - Location of fencing for private swimming pools
  - AS1926.3-2003 Swimming pool safety - Water recirculation systems
  - AS2610.1-1993 Spa pools Part 1: Public spas
  - AS2610.2-1993 Spa pools Part 2: Private spas
  - AS/NZS3136:2001 Approval and test specification - Electrical equipment for spa and swimming pools
- testing procedures
- workplace safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by planning and supervision of a system for selecting, procuring and safely storing all materials required for construction of a swimming pool and spa.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- identify suitable swimming pool and spa building materials specified by the project or contract
- use effective verbal and written communication with manufacturers and suppliers of materials
- apply effective and efficient testing of the materials to maintain quality standards on site
- use effective sampling and record keeping processes
- ensure safe handling and storage of materials
- comply with organisational and legislative requirements.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- documentation that should normally be

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EVIDENCE GUIDE

	available in either a building or construction office • relevant codes, standards and regulations • office equipment, including calculators, photocopiers and telephone systems • computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies • a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature • a suitable work area appropriate to the construction process. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances

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assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Materials commonly used in swimming pools and spas include:

- concrete
- fibreglass and plastics
- cements
- masonry units
- mortars
- paints and coatings
- ceramics
- structural steel.

Records of materials ***tested*** are kept and reported by:

- distributing copies in accordance with organisational policy

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RANGE STATEMENT

	• following up reports that indicate departures from quality or manufacturing requirements • obtaining appropriate records and reports for review and analysis • proving advice and information to regulatory authorities as authorised by the organisation • taking appropriate remedial action within the scope of individual's authority.

Selected for ***suitability*** involves a range of processes including:	• analysing reports, manufacturer specifications or other reference material regarding the suitability of new swimming pool and spa building material technologies with reference to BCA requirements
	• arranging industry standard, external quality tests or inspections and provision of results as necessary
	• arranging relevant industry standard, on-site quality tests for products to be used in swimming pools and spas
	• decision making to ensure appropriate materials are selected, including:
	  • identifying materials from specifications and drawings
	  • identifying specifications and standards described in the contract documents
	  • selecting and ordering materials that meet those requirements
	• arranging for expert advice as necessary to confirm or refute materials options
	• referencing external reports and manufacturer specifications
	• refusing acceptance of sub-standard or out of specification materials
	• seeking expert appraisal from relevant industry professionals, including architects, designers and engineers.

Materials are handled correctly and safely includes:	• allocation of space for on-site storage of materials • confirming products or materials are as ordered and signing off delivery documentation • ensuring safe unloading and handling of swimming pool and spa building materials • ensuring safe use of hazardous materials and

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RANGE STATEMENT

	complying with statutory or regulatory requirements • ensuring correct materials are being delivered to correct site • providing for adequate on-site security of materials • undertaking quality checks within the competence of the individual.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC4051A Supervise asbestos removal

Modification History

New to CPC08

Unit Descriptor

This unit of competency specifies the outcomes required to supervise the removal process for friable and non-friable asbestos containing material (ACM). The unit includes planning for and supervising the removal process, including preparing the work area and the work site, using safe and compliant removal practices, maintaining safety procedures, and supervising the decontamination and removal processes.

Ensuring compliance with the asbestos removal control plan (ARCP) is central to the effective performance of the role. This includes ensuring and documenting that required air monitoring and other testing and certification processes are conducted by licensed asbestos assessors according to legislation.

Application of the Unit

Site location for work may be either domestic or commercial, and may be a demolition site, a new work site or an existing structure being renovated, extended, restored or maintained. Project sites may be construction sites and may also include ships, soils and fences.

Licensing/Regulatory Information

Occupational licenses are required nationally.
Work must be completed according to relevant legislation, the Code of Practice for the Safe Removal of Asbestos, industry guidelines, customer and organisational requirements, including work health and safety (WHS) policies and procedures.
Regulatory mechanisms apply to this unit. This unit is required for all supervisors of the ACM removal process. Candidates are advised to check for regulatory requirements.

Pre-Requisites

CPCCOHS1001A	Work safely in the construction industry

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan for asbestos removal.	1.1	Work instructions, other required ***information*** and the client's brief are obtained, clarified, confirmed and applied for planning purposes.
		1.2	Asbestos register, if available, is obtained and reviewed to inform planning.
		1.3	Work site is inspected to confirm requirements and inform the planning process.
		1.4	Scope of job is identified and initial ***preparations*** are conducted according to workplace requirements.
		1.5	Staffing levels required for completion of job are confirmed.
		1.6	Required quantity of ***materials*** is calculated according to job specifications and ***quality requirements***.
		1.7	***Safety*** requirements and data from asbestos register, project construction safety emergency plan, safe work methods statement (SWMS) for a construction site, and other information sources are identified to prepare for a safe and compliant removal process.
		1.8	***Plant, tools, equipment*** and ***personal protective equipment*** (PPE) to carry out the job are identified, sourced and steps taken to ensure their serviceability.
		1.9	***Environmental requirements*** are identified for the job according to environmental plans and regulatory obligations, including preparations for a clearance

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			inspection by a licensed asbestos assessor.
		1.10	Processes required to meet health-monitoring and air-monitoring requirements are identified and planned with the licensed asbestos assessor and within limits of own responsibility.
		1.11	Occupants, neighbours and other affected parties are notified according to legislation and the code of practice and within limits of own responsibility.
		1.12	Proper identification and handling of ***asbestos containing materials*** are planned and implemented according to legislative and regulatory requirements.
		1.13	ARCP is developed within limits of own responsibility.
		1.14	Required documentation is prepared and steps are taken to ensure authorisation according to legislative and company requirements.
		1.15	Arrangements and work schedules are organised so that ***compliant supervision*** of the asbestos removal job is undertaken.
2	Prepare site for removal.	2.1	Workers' certificates of competency for the type of removal required are sighted by the supervisor and records are kept on site.
		2.2	Team members are provided with instructions for the safe and compliant conduct of the job according to the ARCP.
		2.3	Steps are taken to ensure the signage and barricades to delineate the work area from the ***work site*** are erected according to legislative requirements.
		2.4	Notification documents for the job, copy of asbestos removal licence, and training documents are secured and steps taken to retain them on site.
		2.5	Daily air-monitoring readings are posted on the work site according to legislative requirements.
		2.6	Team members are provided with PPE and its proper usage and fit are checked.
		2.7	Steps are taken to ensure all equipment is installed and

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			checked for serviceability according to legislation and manufacturer specifications for use.
		2.8	Final safety checks are made of the site, including ensuring that ***utilities*** are deactivated and secured prior to commencing work.
3	Supervise testing, compliance and documentation in consultation with the licensed asbestos assessor and the asbestos removalist.	3.1	Communication is undertaken with the licensed asbestos assessor to ensure compliance with legislative requirements for air monitoring.
		3.2	***Testing*** of equipment and work site is supervised to ensure compliance with legislative requirements.
		3.3	In consultation with the licensed asbestos assessor and the asbestos removalist ensure that corrective action is taken, as required, should initial test results not conform to legislative requirements.
		3.4	On advice from the licensed asbestos assessor, steps are put in place to ensure removal does not occur until air-monitoring checks have been undertaken and documented according to legislative requirements.
		3.5	Required ***documentation*** is completed and forwarded to authorities according to legislative and workplace requirements.
4	Oversee removal and decontamination processes.	4.1	Set-up and daily checking of equipment are supervised to ensure safety, efficiency and compliance with legislative requirements.
		4.2	Removal of asbestos from the structure is supervised using ***safe work methods*** and according to the ARCP, regulatory requirements and codes of practice.
		4.3	Steps are taken to ensure asbestos is contained and placed in double-lined bins or 'double-bagged' according to regulatory requirements.
		4.4	Bags are sealed, labelled and removed from work area to designated work site area according to the ARCP.
		4.5	Arrangements are made with removal firms and bin suppliers to ensure the timely and appropriate removal of ACM from the site, and waste facility dumping

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			receipts are received as evidence of compliance.
		4.6	Supervision is provided of the facilities and processes to ensure the compliant decontamination of team members and the work area and work site.
		4.7	Clearance inspection, including air monitoring as required, is conducted of work area, work site and equipment to ensure job is completed according to legislative and workplace requirements.
		4.8	Site is secured according to legislative requirements until clearance inspection and air-monitoring results have been approved and clearance certificate has been received.
		4.9	Incidents are identified and reported according to company and legislative requirements.
5	Supervise and support team members.	5.1	***Appropriate training*** on site is provided to asbestos removal team workers to ensure safe and compliant operations of the job site, including use of the ARCP, company's WHS policies, and site safety plan.
		5.2	Work is scheduled to ensure the timely and efficient completion of the job and operation of the team.
		5.3	Processes are put in place to encourage open communication with team members regarding safety and the appropriateness of work practices.
		5.4	Constructive feedback is provided to team members regarding work performance to improve efficiency and safe work practices.
		5.5	Steps are taken to build and reinforce a workplace culture that supports quality, compliant operations and safety.
		5.6	Team performance is managed according to company and legislative requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication, and appropriate level of language skills, to:
  - determine requirements
  - prepare documentation (including ARCP) that is accurate, clear and complete
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow and give instructions
  - liaise with related professionals, including occupational hygienists, assessors and testing authorities
  - reduce potential for conflict, particularly in relation to liaison with concerned neighbours, by providing clear information that gives reassurance about the process being undertaken
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - use language and concepts appropriate to cultural differences
- coaching and mentoring skills to strengthen workplace culture and manage the performance of a team
- initiative and enterprise skills to:
  - evaluate own actions and make judgements about performance and necessary improvements
  - identify and report faults in tools, equipment and materials
- planning and organising skills to:
  - plan and set out work
  - set up the decontamination process
- teamwork skills to:
  - coordinate own work and supervise the work of others
  - relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- self-management skills to:
  - set up the asbestos removal area according to safe work methods
  - apply general WHS requirements for work in the construction industry, including applying safe work methods for the removal of friable and non-friable asbestos
  - respond effectively to timelines, deadlines and complex work requirements
  - follow correct decontamination procedures

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- use, fit and maintain PPE, decontamination equipment, hand and power tools safely

Required knowledge

- range of materials manufactured using asbestos, type and characteristics of asbestos used in each material, and usual applications associated with the material
- methods and purpose for assessing hazards relating to friable ACM, together with an understanding of:
  - health effects caused by exposure to ACM and requirement for safe handling and removal
  - health impacts on the community and requirement for safe handling and disposal
- requirements of current legislation and standards relating to asbestos safety, and the preparation of an ARCP and related documentation
- rationale for, and principles underpinning, the ARCP and related legislation
- air-monitoring procedures and testing requirements, including for interpretation of results
- general WHS procedures for construction work
- health hazards associated with friable ACM, such as:
  - weathering
  - wear and tear
  - application of tools and equipment
  - accidental damage
- licensing requirements for the use of specific equipment, such as excavators
- safe work methods for the removal of friable and non-friable asbestos
- hazards associated with using enclosures and removing friable and non-friable asbestos
- general construction terminology
- handling requirements of differing types of asbestos materials
- work site and work area procedures for the safe removal of friable and non-friable asbestos
- job safety analysis (JSA) and SWMS, if required for construction
- safety data sheets (SDS)
- materials storage and hazardous waste management in relation to asbestos products
- method of operation, and cleaning, use and maintenance requirements of equipment
- plans, drawings and specifications, asbestos registers and register amendments
- quality requirements relating to supervising asbestos removal
- risk assessment processes and contingency planning relating to supervising asbestos removal
- techniques associated with containing and removing asbestos, including:
  - use of large and small-scale enclosures for different sites
  - use of negative pressure exhaust units
  - encapsulation methods
  - use of decontamination units

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- types, characteristics, uses and limitations of plant and equipment involved in enclosing and removing asbestos
- workplace and equipment safety requirements
- application of the documentation for notification and re-notification
- duties and obligations of the supervisory role, including:
  - implementing the ARCP with control monitoring and clearance inspections as required for Class A removal
  - using the certified WHS management system and emergency plan as required

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, providing that simulated or project-based assessment techniques fully replicate workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person should demonstrate the ability to:
	• obtain and apply work instructions for the safe and correct removal of asbestos
	• plan for the safe and correct removal of asbestos, including:
	  • analysing all documentation, such as the asbestos register
	  • scoping and resourcing the work
	• work with and supervise the removal team to ensure the safe and correct removal of ACM
	• supervise and coordinate as required the testing process in strict compliance with legislation and code of practice
	• supervise decontamination process for workers, equipment and work site to ensure strict compliance with legislation and code of practice
	• complete documentation that supports the removal process within limits of own responsibility
	• demonstrate team supervision for the safe and compliant removal of ACM.

Context of and specific resources for assessment	This unit is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity

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	• workplace instructions relating to safe work practices and addressing hazards and emergencies • research resources, including industry-related systems information • safety data sheets. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge • all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed. Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information to ensure the safe and correct completion of the job may include:	• assessor's control air-monitoring report • company policies and procedures • JSA and SWMS for construction as required • operating manuals (WHS management systems) and specifications for materials and equipment • asbestos register • diagrams or sketches • instructions issued by authorised organisational or external personnel • manufacturer specifications and instructions, where specified and SDS • regulatory and legislative requirements for enclosing and removing friable and non-friable asbestos • relevant Australian standards and codes • safe work procedures relating to enclosing and removing asbestos • signage • memos, verbal and written instructions, and diagrams • work bulletins, work schedules, plans and specifications.
Preparations at the commencement of the job may include:	• preparing and implementing the ARCP • assessing conditions and hazards • determining work requirements, and safety plans and policies • consulting with local authorities (councils) and local waste management and transport authorities to determine requirements • identifying equipment defects • identifying and preparing for containing and removing asbestos from a work site according to ARCP • inspecting work site • conducting work site inductions.
Materials must be relevant to the type of asbestos removed and may include:	• acrylic paint to seal ACM • approved and branded or labelled plastic bags • duct tape • foam infill spray • gaffer tape • plastic sheeting

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	• polyvinyl alcohol (PVA) adhesive as spray / spray tack glue • rags or other material wipes • heavy-duty polythene bags (200 µm minimum thickness) • 200 µm unused (not recycled) plastic sheeting or drop sheet • drums or bins in good condition with well-fitting lids and labelled with required warning sign • signs • timber frames, nails, aluminium poles and other materials required for enclosures.
Quality requirements may include:	• internal company quality policy and standards • manufacturer specifications • relevant regulations, including Australian standards • workplace operations and procedures.

Safety procedures are to be according to state and territory legislation and regulations and project safety plan and may relate to:	• conduct of work site induction
	• emergency procedures, including extinguishing fires, and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability, are a factor
	• hazard control
	• hazardous materials and substances
	• organisational first aid requirements
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures according to SWMS, including the conduct of operational risk assessment and treatments associated with:
	  • deactivating or securing utilities, including electrical, air conditioning and water services
	  • earth leakage boxes
	  • falling objects
	  • lighting
	  • plant movement
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces

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	• working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Plant, tools and equipment must be relevant to the job (whether for the removal of friable or non-friable ACM), may require separate licensing for use, and may include:	• high efficiency particulate air (HEPA) vacuum cleaners to comply with AS3544-1988 and AS4260-1997 as amended from time to time • pipelines • anchorage points for enclosures • atomiser water bottles and hand pressure sprayer • barricades • barricade tape, including para-webbing or fencing • bars (crow and pinch) • bolt cutters • buckets • cold chisels • enclosure equipment for large-scale asbestos removal work • excavators • mini-enclosures for small-scale asbestos removal work • glove bag or wrap and cut equipment • negative air pressure enclosures or bubbles • negative pressure exhaust units • PVA adhesive as spray / spray tack glue • scaffolds • scrapers • shovels and spades • signs • smoke generators • staple guns • decontamination unit and remote decontamination units if required for large-scale removal • decontamination facilities for non-friable asbestos removal • drills (manual and low-speed only) • enclosures for large-scale asbestos removal work • flame retardant polythene • hammers • hand drills • hardboard / corex • hoses and spray fittings • ladders to comply with construction regulations.
Personal protective equipment will be	• protective clothing, such as: • disposable coveralls with fitted hood and cuffs

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specified to the requirements of the job and may include:	• safety footwear (pull-on, not lace-up) • disposable or protective gloves • determining the respiratory protection class appropriate to the type of asbestos to be removed, which may be P1, P2 or P3, or using full-face, powered, air purifying particulate respirator fitted with class P3 filter cartridge • correct face fitting and use of respiratory protective equipment • spare sets of PPE • general WHS requirements, including first aid kit locations.
Environmental requirements must fully reflect legislation and the Code of Practice for the Safe Removal of Asbestos, including:	• clean-up management • dust and noise management • sedimentation control • vibration management • waste management, including the safe disposal of ACMs, including waste water from decontamination unit (DCU).
Asbestos containing materials (both friable and non-friable) may include: **Note:** • Non-friable asbestos is also known as bonded asbestos • ACM notionally listed as non-friable may become friable due to weathering or damage	• acoustic plaster soundproofing • adhesives and glues • asbestos cement • asbestos cement moulded guttering • asbestos cement sheets • asbestos tiles • bitumastic felts and materials • cable bandages • compressed asbestos cement panels • floor vinyl covering • gaskets • millboard • mortar • pipe lagging • electrical meter boxes and related devices • woven textiles, ropes, tapes and braids • decorative coatings • resinous backing board • sealant mastic • sprayed on fireproofing, soundproofing and thermal insulation • tape • thermal insulation.
Compliant supervision entails being:	• on site at all time for the removal of friable asbestos • accessible for the removal of non-friable asbestos.
Work site may include:	• residential, commercial, industrial and public buildings • plant, equipment and fire boards (e.g. friction plant and

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	gaskets) • demolition sites • fences • soil • ships and other forms of transport.
Utilities may include:	• air conditioning • electricity • water services.

Testing procedures:	• must:
	  • conform to legislative requirements
	  • be conducted by a licensed asbestos assessor
	• may include:
	  • air monitoring
	  • analysis of materials to determine presence and type of ACM
	  • smoke tests for leaks in the enclosure.

Documentation may include:	• air-monitoring results • asbestos register • notification of asbestos removal work to the regulator as required • asbestos removal control plan • WHS management system • JSA and SWMS for construction • implementation and development of emergency plan • health-monitoring program • leak test results • clearance inspections and certificates • training certificates.
Safe work methods may include:	• compliant set-up of the asbestos work area, including set-up of negative air, lighting, water and emergency supplies • placing adequate signage around work site • fire and emergency system requirements • enclosure of the asbestos removal area and the plant, equipment and fixtures remaining in the area • testing of the asbestos work area by a licensed asbestos assessor • procedures for entering and leaving the asbestos work area • safe techniques for removing friable and non-friable asbestos • packaging, sealing and removing contaminated plant, tools and equipment • cleaning and decontaminating the asbestos work area • decontaminating and demobilising the work site

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	• final decontamination of personnel • disposing of asbestos waste.
Appropriate training for team members may include:	• conducting on-site training, either one-on-one or small group sessions • recording the mandatory unit of competency for workers for licensed asbestos removal work • providing briefings and explaining the content of induction manuals.

Unit Sector(s)

Construction

Custom Content Section

Not applicable.

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CPCCBC5001B Apply building codes and standards to the construction process for medium rise building projects

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency specifies the outcomes required to access, interpret and apply relevant building codes and standards applicable to the construction processes of medium rise commercial and wide span buildings (medium rise licensing classification with reference to Classes 1 and 10 construction, Classes 2 and 3 to a maximum of 3 storeys, and Classes 4 to 9 to a maximum of 3 storeys, not including Type A construction). To successfully construct medium rise buildings requires thorough knowledge of the purpose and content of the Building Code of Australia (BCA), coupled with the ability to interpret other codes and standards related to a specific building.

Application of the Unit

Application of the unit	This unit of competency supports builders, project managers and related construction industry professionals responsible for ensuring compliance with building codes and standards in the building and construction industry.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units	Nil

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Access and interpret relevant code and standard requirements.	1.1. Relevant performance requirements from the BCA that apply to individual projects (classified as ***medium rise***) are identified. 1.2. Requirements of relevant BCA deemed-to-satisfy (DTS) provisions are determined. 1.3. Requirements of relevant Australian standards referenced in the BCA are accessed and interpreted appropriately.
2. Classify buildings.	2.1. Nature of building is determined according to use and arrangement. 2.2. BCA criteria to determine the defined classification are applied.
3. Analyse and apply a range of solutions to a construction problem to ensure compliance with the BCA.	3.1. Range of criteria that will ensure that construction methods comply with BCA performance requirements is determined. 3.2. Alternative solutions to a design or construction BCA-compliance problem are discussed and proposed in accordance with company policies and procedures. 3.3. Performance-based solutions are identified and documented in accordance with BCA requirements and organisational quality procedures and processes. 3.4. ***Assessment methods*** referenced in the BCA to determine whether a building solution complies with ***performance requirements*** or DTS provision of the BCA are analysed and applied. 3.5. Relevant documentation is identified and completed in accordance with BCA requirements.
4. Apply fire protection requirements.	4.1. Passive and active fire control elements required by the BCA and other legislation are identified. 4.2. Level of fire resistance required for the construction of various medium rise buildings is determined. 4.3. BCA requirements with respect to passive and active fire protection to medium rise buildings are identified and applied. 4.4. Check of existing buildings for compliance with passive and active fire protection requirements is carried out in accordance with BCA requirements.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills

Required skills for this unit are:
• analysis and interpretation skills relating to documentation from a wide range of sources, including BCA and referenced documents
• application of design concepts and principles in accordance with BCA, namely medium rise:
  • Classes 1 and 10
  • Classes 2 and 3 to a maximum of 3 storeys
  • Classes 4 to 9 to a maximum of 3 storeys, not including Type A construction
• accurate application of building codes and standards
• communication skills to:
  • enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  • discuss and propose alternative solutions
  • read and interpret:
  • documentation from a variety of sources, including BCA and referenced documents
  • specifications and drawings
  • use and interpret non-verbal communication
  • use language and concepts appropriate to cultural differences
• written skills to complete documentation in accordance with BCA requirements
• numeracy skills to apply mathematical information included in building codes and standards
• technological skills to facilitate use of the organisation's software and office equipment.

Required knowledge
Required knowledge for this unit is: • BCA performance hierarchy • interpretation and analysis of working drawings and specifications • relevance of Australian standards • relevant legislative and OHS requirements, codes and practices • relevant licensing arrangements • thorough understanding of the BCA, namely medium rise: • Classes 1 and 10

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REQUIRED SKILLS AND KNOWLEDGE
• Classes 2 and 3 to a maximum of 3 storeys • Classes 4 to 9 to a maximum of 3 storeys, not including Type A construction.

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	This unit of competency could be assessed by the application of design principles and solutions specified in BCA performance requirements or DTS provisions applicable to a particular building project. This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with organisational quality procedures and processes • apply and interpret relevant documentation and codes • apply BCA performance requirements relating to design and construction of a medium rise building • demonstrate understanding of assessment methods available to determine compliance with the BCA.
Context of and specific resources for assessment	This unit of competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • access to BCA and relevant documents referenced in the BCA

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EVIDENCE GUIDE	
	• access to relevant legislation • project documentation, including design brief, design drawings, specifications and construction schedules • research resources, including product information and data • relevant computer software package and suitable hardware. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

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EVIDENCE GUIDE	
	• all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed. Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Medium rise falls within the BCA classes:	• 1 and 10 • 2 and 3 to a maximum of three storeys • 4 to 9 to a maximum of three storeys, not including Type A construction.
Assessment methods include:	• comparison with BCA DTS provisions • evidence of suitability as described in the BCA • expert judgement as defined in the BCA • verification method as defined in the BCA.
Performance requirements include:	• those contained within other legislation applicable to a specific project • performance requirements of the BCA determined to be relevant to a specific project • performance-based contractual requirements that must be fulfilled by any party.

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Unit Sector(s)

Unit sector	Construction

Co-requisite units

Co-requisite units	Nil

Competency field

Competency field	Building services

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CPCCBC5002A Monitor costing systems on medium rise building and construction projects

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to monitor building or construction costing systems. The processes and practices involved in supervising and monitoring costing systems result in the ongoing maintenance of cost control and the production of expenditure schedules and other arrangements, which ensure contracts or projects remain on budget.

In order to achieve the outcomes for this unit, knowledge of relevant legislation, codes and standards, industry estimating and costing systems, and financial principles is required.

Application of the Unit

Application of the unit

This unit of competency supports the needs of builders, senior managers in building and construction firms, and other construction industry personnel responsible for monitoring building or construction costing systems for medium rise building and construction projects.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Supervise the identification and classification of project costs.	1.1. Staff members are supervised in their ***identification of building or construction costs*** and accurate estimates are made from project schedules. 1.2. Definitive cost estimates are accurately translated into the correct cost centres appropriate to contract requirements. 1.3. Cost centres are correctly identified and incorporated into a planned project cost network. 1.4. Risk assessment is undertaken and estimated cost is compared with estimated risk. 1.5. Planning ensures compliance with relevant codes of practice, standards and legislative requirements.
2. Manage the preparation of a schedule of project expenditure.	2.1. Draft ***schedules of project expenditure*** are prepared with critical points identified. 2.2. Expenditure schedules are prepared using organisational processes, and hard copies are produced. 2.3. Critical financial phases of the project are identified and cash flows are matched to expenditure.
3. Prepare curves showing projected cash flow and payments.	3.1. Interim payment claims and rise and fall calculations are prepared for the contractor and subcontractors. 3.2. Projected S curve is prepared to show cash flow and resource control. 3.3. ***Projected cash flow and payments*** using time risk and cost risk are prepared and compared. 3.4. Cash flows using early start and late finish for pessimistic or optimistic outcomes are compared. 3.5. Pessimistic overdraft requirements are calculated.
4. Maintain continuous checks on expenditure and evaluate outcomes.	4.1. Cash flow and creditor payments are monitored daily. 4.2. Budget cost of the network is compared to actual costs in the tender calculations. 4.3. Rise and fall clause calculations are undertaken and financial controller is advised of variations. 4.4. Reasons for any cost variations are analysed and identified. 4.5. Remedial action is taken and recorded as necessary to retain contract financial compliance.
5. Prepare final cost	5.1. Actual costs are compared with estimates at the completion of the job and a report is compiled

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ELEMENT	PERFORMANCE CRITERIA
report.	detailing future actions. 5.2. Organisational rates are adjusted as required, based on the ***final cost report*** and current movements in prices and rates.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- account keeping skills to identify cost centres and monitor cash flows
- analysis and interpretation skills to undertake financial risk assessments
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret documentation from a variety of sources
  - supervise staff members
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to prepare draft schedules of project expenditure and final cost reports
- management skills, including the ability to supervise staff
- numeracy skills to perform complex financial calculations
- preparation of schedules of expenditure and expenditure projections.

Required knowledge

Required knowledge for this unit is:

- advanced estimating and costing systems used in the building and construction industry
- expenditure evaluation methods
- financial principles and cash flows
- project financial processes and timelines
- relevant licensing arrangements
- relevant standards, codes of practice and legislation for medium rise construction projects

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REQUIRED SKILLS AND KNOWLEDGE

- variations in rates occurring through rise and fall clauses and their effects.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed by the effective monitoring of a building or construction costing system. This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • monitor and supervise staff who develop and consolidate costing data for Class 2 to 9 Type A building and construction projects • compare the extent and effectiveness of actual versus estimated costs and the production of schedules of expenditure • produce efficient and punctual financial data in the form required by the organisation • plan and continuously revise the schedules of payments and cash flows to match contract performance and efficiency.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory

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EVIDENCE GUIDE

or Australian standards' requirements.

Resource implications for assessment include:

- documentation that would support building or construction costing systems for a building or construction office
- relevant codes, standards and regulations
- office equipment, including calculators, photocopiers and telephone systems
- computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies
- a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature
- a suitable work area appropriate to the monitoring process
- copies of appropriate awards and workplace agreements.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over

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EVIDENCE GUIDE

a period of time reflecting the scope of the role and the practical requirements of the workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Identification of building or construction costs includes:

- human resource costs, including direct employees' and subcontractors' rates
- materials, such as sand, aggregate, bitumen, concrete, bricks, roofing and reinforcing
- overhead costs, including administration

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RANGE STATEMENT

	support, power, lighting, accommodation and rent • plant and equipment purchase or lease and operating costs • relevant codes, standards and legislation • site services, such as temporary power, lighting and water • specialist services, such as surveying, architectural, testing and legal • temporary accommodation and shelter, including sheds, site offices and toilets.
Schedules of project expenditure include:	• consumables, such as fuel and lubricants, electric power and water • costs of pre-cast and on-site production of concrete components • labour costs against estimated costs • labour hours consumed against estimates • materials • supplies, such as timber and building materials.
Projected cash flow and payments include:	• progress payments in for work completed • progress payments out for work undertaken • progress payments for supplies and materials • penalties • wages and salaries • insurances, including workers' compensation premiums.
Final cost report includes:	• cost-benefit analyses of overtime payments • detailed summaries of actual costs against estimates • details of cost over-runs and savings on labour and contracting out • details of savings or under-expenditure on materials or supplies • equipment performance information and efficiencies.

Unit Sector(s)

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Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC5003A Supervise the planning of on-site medium rise building or construction work

Modification History

Not Applicable

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Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to supervise the planning process and organisation of on-site building or construction work projects up to and including medium rise commercial and wide span buildings (medium rise licensing classification with reference to Class 1 and 10 construction, Class 2 and 3 to a maximum of 3 storeys, Class 4 to 9 to a maximum of 3 storeys, not including Type A construction).

Successful supervision of planning and organisation requires effective interpretation of contractual and planning requirements and development of strategies for using human and physical resources effectively in order to comply with contractual obligations.

In order to achieve the outcomes for this unit, knowledge of relevant building and construction planning practices, state or territory building and construction codes, standards and regulations and human resource principles and practices is required.

Application of the Unit

Application of the unit

This unit of competency supports builders, related construction industry professionals and senior managers within building and construction firms responsible for supervising the planning of on-site building or construction work for medium rise building and construction projects.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Appraise the contractual documentation and delegate the planning of operational requirements as necessary.	1.1. Copies of building approvals and conditions relating to the medium rise building or construction project are obtained. 1.2. ***Contracts*** are reviewed to determine any unusual aspects of construction, use of materials or penalty provisions. 1.3. Possible design problems are identified and brought to the attention of project consultants. 1.4. Availability of subcontractors and their suitability to meet job requirements specific to medium rise projects is reviewed. 1.5. Availability of materials and conditions of purchase and authorised purchases are reviewed. 1.6. Access to the site is established within requirements and on-site accommodation is located in an appropriate location. 1.7. Contact is established and maintained with relevant statutory authorities controlling construction work.
2. Initiate strategies and delegate the implementation of medium rise construction operations, as necessary.	2.1. ***Resources*** supply system for controlling and recording materials entering and leaving the site is implemented and maintained. 2.2. Procedures for recording and paying for the hire of plant equipment and authorising payment are managed. 2.3. OHS and rehabilitation procedures, including hazard and risk management, are established. 2.4. Procedures for the removal of existing services and hazardous materials are planned and implemented in accordance with regulatory requirements. 2.5. Procedures required for the control of multiple projects are established.
3. Supervise the preparation of project schedules.	3.1. Construction operations are planned and executed in sequence. 3.2. Entering of operations data into an appropriate scheduling system for analysis is managed. 3.3. Project's critical path is established and revision of the ***project schedule*** is managed with new projects incorporated and documented as required. 3.4. Strategies for avoiding and overcoming project delays are developed. 3.5. Management is advised of cost-benefits and

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ELEMENT	PERFORMANCE CRITERIA
	implications of providing overtime payments.
4. Ensure the provision of all resources required for project.	4.1. Adjustments to the project timeframe to take account of anticipated delays are facilitated. 4.2. ***Temporary services*** and site accommodation needs are identified and arranged as required. 4.3. Plant requirements, site location and installation dates are confirmed. 4.4. On-site personnel and labour requirements are determined and documented.
5. Review existing on-site buildings or structures.	5.1. Condition of existing buildings or structures to be retained, and structures on adjacent site boundaries, are reviewed and recorded. 5.2. Copies of reports are submitted to adjacent building owners prior to commencing construction work.
6. Supervise staff and maintain an effective work environment.	6.1. Overview of the project site or sites is maintained and staff resources are allocated according to organisational, regulatory and project needs. 6.2. Activities of contract planning personnel are monitored and an effective work environment is maintained. 6.3. Effective human resource practices and policies which maximise performance and productivity are employed.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- evaluation skills to review and evaluate documentation and processes and recommend changes or improvements
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - discuss problems with consultants
  - manage staff

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REQUIRED SKILLS AND KNOWLEDGE

- read and interpret:
  - contracts, project schedule and reports
  - documentation from a variety of sources
- use and interpret non-verbal communication
- use language and concepts appropriate to cultural differences
- written skills to:
  - document project schedule and resource requirements
  - maintain records
  - record relevant information
- management skills, including the ability to delegate tasks and supervise staff to achieve planning outcomes
- planning skills to enable the effective planning of projects, processes and strategies which maximise the efficiency and cost-effectiveness of building or construction contracts and which effectively organise and use available resources on construction sites.

Required knowledge

Required knowledge for this unit is:

- building and construction industry contracts
- building and construction industry subcontracting system
- building or construction practices in on and off-site management
- construction planning process
- contract documentation, quantities establishment, rates and costs related to payments and claims
- human resource principles and practices
- relevant licensing arrangements
- relevant state or territory building and construction codes, standards and government regulations for medium rise building projects
- workplace safety requirements.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment This unit of competency could be assessed by the

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EVIDENCE GUIDE

	demonstration of effective supervision of planning on-site building or construction work. This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • translate contract requirements into construction plans and processes • delegate planning tasks • apply construction planning processes that effect desired outcomes • development strategies that effectively maximise resource use • establish and maintain a workplace environment representative of good management practice.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • available in either a building or construction office • relevant codes, standards and regulations • office equipment, including calculators, photocopiers and telephone systems • computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies • a technical reference library with current publications on measurement, design, building construction and manufacturers' product

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EVIDENCE GUIDE

literature

- a suitable work area appropriate to the process.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language,

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EVIDENCE GUIDE

literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Contracts include:

- Australian standard contracts, including the AS2124 and AS4000 series
- Construction Industry Contract (CIC) suite
- individual organisational contracts
- Joint Contracts Committee (JCC) suite
- MBA and HIA contracts
- Simple Building Works (SBW), including series 1 and series 2 (SBW2 Lump Sum).

Resources include:

- human resources, both organisational and subcontracted
- on-site facilities
- plant and equipment
- power, water, telephone and other resources
- pre-cut or pre-cast components
- raw materials
- temporary accommodation.

Project schedule includes:

- critical events and milestones
- labour supply and availability information
- materials supply and availability information
- plant and equipment availability information
- services provision

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RANGE STATEMENT

	• subcontractor requirements and availability.
Temporary services include:	• offices and crib rooms • on-site communications • portable generators and lighting • power poles • toilets.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC5004A Supervise and apply quality standards to the selection of building and construction materials

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to supervise the systems through which materials are selected, acquired and stored on site for building or construction work up to and including medium rise projects. It ensures the delivery to the site of materials that meet contract specifications and service requirements for commercial projects.

To achieve the outcomes for this unit, knowledge of relevant building construction materials and technologies, environmental effects on materials and testing procedures is required.

Application of the Unit

Application of the unit

This unit of competency supports builders, related construction industry professionals and senior managers within building and construction firms responsible for supervising and applying quality standards to the selection of construction materials for medium rise building and construction projects.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and describe the properties of building materials.	1.1. Suitability of ***materials*** commonly used in the region is identified for a given building system. 1.2. Properties of materials, their standards of quality and the compatibility and non-compatibility of different materials are identified. 1.3. Environmental impacts of different materials are identified. 1.4. Impact of allowable tolerances on the conversion of naturally occurring materials is identified. 1.5. Tolerances for installing and assembling materials are identified and checked in regard to the nature of the work being performed and the requirements of Australian standards.
2. Ensure suitable building materials are selected for application.	2.1. ***Selection of building materials*** is conducted with reference to structural requirements and suitability for the building system specified in the contract. 2.2. Materials are selected for their safety, required fire resistance rating, serviceability and cost effectiveness. 2.3. Short and long-term degradation of materials is considered in relation to the proposed life cycle of the building. 2.4. Alternative materials are selected if specified materials are unavailable or unsuitable.
3. Supervise the acceptance, safe handling and storage of materials on site.	3.1. Organisational procedures for the ***acceptance***, ***safe handling and storage of materials*** on site are identified and communicated. 3.2. Limitations and effects of transportation on materials and components are determined and action is taken in the case of potentially damaging circumstances. 3.3. Materials are handled correctly and safely on site using appropriate equipment and safe work practices. 3.4. Materials are stored in accordance with manufacturer specifications and in compliance with the relevant Australian standards. 3.5. Systems are implemented for inspecting all materials delivered on site for naturally occurring and/or manufactured defects before installation. 3.6. Personnel are aware of actions to be taken in the case of defects caused by incorrect installation, application or placement.

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ELEMENT	PERFORMANCE CRITERIA
	3.7. Timber is preserved and ferrous and non-ferrous metals used in the construction process are protected using established methods.
4. Supervise testing of materials on site for suitability and fitness for purpose.	4.1. ***Testing of materials***, including soil, filling, compacting, surfacing, concreting and welding, is carried out to specifications and results are analysed on-site before and during installation. 4.2. Samples of materials taken during placement or installation are accurately identified and sent for laboratory testing. 4.3. Materials are given visual checks for suitability before building in, with materials sent off-site for testing if required. 4.4. Processes are implemented to ensure defective materials are identified and remedial action is recorded.
5. Establish records of materials testing and report on testing process conformance or otherwise.	5.1. ***Records of tests and testing procedures*** are established and maintained by the organisation in accordance with its quality management obligations. 5.2. Test results and reports are periodically evaluated to maintain integrity of organisational quality standards. 5.3. Non-conformant on-site materials tests are immediately notified to the appropriate company officer for further action.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- apply numeracy skills to workplace requirements
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - communicate organisational procedures and other information to relevant personnel

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REQUIRED SKILLS AND KNOWLEDGE

- read and interpret:
  - documentation from a variety of sources
  - plans, specifications and drawings
- report on difficulties with either supply or standards of materials
- use and interpret non-verbal communication
- use language and concepts appropriate to cultural differences
- written skills to:
  - establish and maintain records of tests and testing procedures
  - record relevant information
- materials testing skills to enable materials to be tested according to relevant Australian standards or the ability to arrange for testing to be carried out independently
- reporting skills to report on difficulties with either supply or standards of materials
- supervisory skills to ensure the correct selection and installation of materials on site and secure storage of materials on site
- systems development skills to ensure systems are developed to ensure correct materials that meet appropriate standards are delivered and used on site.

Required knowledge

Required knowledge for this unit is:

- alternative materials
- building and construction materials and technologies
- construction and contracting equipment and its use
- construction supply processes
- environmental effects on various building and construction materials
- relevant licensing arrangements
- testing procedures
- workplace safety requirements.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment This unit of competency could be assessed by the effective supervision and application of quality

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EVIDENCE GUIDE

	standards to the selection of specified construction materials. This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • identify building and construction materials specified in the project or contract documentation • communicate effectively both verbally and in writing with manufacturers and suppliers of materials • test the materials to maintain quality standards on site • apply effective sampling and record keeping processes • use safe handling and materials storage techniques • comply with organisational and legislative requirements.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • documentation that should normally be available in either a building or construction office • relevant codes, standards and regulations • office equipment, including calculators, photocopiers and telephone systems • computers with appropriate software to view

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EVIDENCE GUIDE

	2-D CAD drawings, run costing programs and print copies • a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature • a suitable work area appropriate to the construction process. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge • all assessment that is part of a structured

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EVIDENCE GUIDE

learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Materials include:

- brick or concrete structures, including:
  - cavity brick
  - core filled concrete blocks
  - single skin clay block
  - tilt-up concrete panels
- cladding, including:
  - brick veneer
  - colourbond and zincalume sheeting
  - fibre cement or compressed wood panelling
  - stuccoed stud walls
  - weatherboards
- floor systems, including:
  - bearers and joists
  - brick bases
  - compressed sheet wet area flooring

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RANGE STATEMENT

	• concrete slab floors, including slabs on ground and suspended slabs • engineered floor Joists • fitted (cut-in) floors • platform floor construction • sheet flooring • tongue and groove flooring • timber and timber structures.
Selection of building materials includes:	• arranging for expert advice as necessary to confirm or refute materials options • identifying materials from specifications and drawings • identifying specifications and standards described in contract documents • selecting and ordering materials that meet those requirements.
Acceptance, safe handling and storage of materials include:	• allocation of space for on-site storage of materials • confirming products or materials are as ordered and signing off delivery documentation • ensuring safe unloading and handling of construction materials • ensuring correct materials are delivered to correct site • providing for adequate on-site security of materials • undertaking quality checks within the competence of the individual.
Testing of materials includes:	• arranging external quality tests or inspections and providing results as necessary • arranging on-site quality and fit for purpose tests for products to be used in construction • completing appropriate organisational records • refusing acceptance of substandard or out of specification materials.
Records of tests and testing procedures include:	• distributing copies in accordance with organisational policy • following up reports that indicate departures from quality or manufacturing requirements • obtaining appropriate records and reports for review and analysis • proving advice and information to regulatory

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RANGE STATEMENT

	authorities as authorised by the organisation • taking appropriate remedial action within the scope of individual's authority.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC5005A Select and manage building and construction contractors

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to select and manage building and construction contractors.

It covers the processes and practices involved in supervising the systems through which the selection and management of subcontract resources occurs within the organisation, and through which subcontracting needs are identified and quantified.

In order to achieve the outcomes for this unit, knowledge of relevant industry legislation, standards and codes, the subcontracting system and industrial relations processes is required.

Application of the Unit

Application of the unit

This unit of competency supports the needs of builders and senior managers within building and construction firms and other construction industry personnel responsible for selecting and managing building and construction contractors for medium rise building and construction projects.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Manage the determination of subcontractor requirements.	1.1. Subcontractor resource requirements are assessed on the basis of expected operations and reference to the business plan. 1.2. ***Subcontractor requirements*** are managed, prioritised and documented on the basis of expected work sequence and volume. 1.3. Task analyses are conducted and managed and competences are identified from the nature of the work to be done and organisational structure. 1.4. Type and number of subcontractors are determined and a formal subcontractor structure is developed for the project. 1.5. Industrial legislation and contract legal matters that impact on operations are researched to clarify workplace obligations and subcontractor rights.
2. Manage the review of subcontractor performance.	2.1. Existing subcontractor areas of expertise are identified or reviewed to build an operational profile for each subcontractor. 2.2. Information is gathered and examined on previous performance of existing subcontractors, their work profiles and history. 2.3. ***Reviewing subcontractor performance*** for the purpose of identifying strengths and weaknesses is undertaken. 2.4. Management plan is developed for each subcontractor to enhance their ability to meet contractual obligations.
3. Establish terms and conditions for subcontractor engagement.	3.1. Subcontractor terms of engagement and scope of operations under the contract are developed or reviewed to ensure contract obligations can be met. 3.2. Conditions to be met under the terms of engagement for subcontractors are reviewed and periodically reinforced with the subcontractors.
4. Manage the selection and engagement of subcontractors.	4.1. Subcontractor engagement strategies and processes are developed and facilitated to meet organisational timelines and contract dates. 4.2. Processes for ***selection and engagement of subcontractors*** are managed to ensure that equal opportunity principles apply to all applicants. 4.3. Subcontractor short-listing and qualification checking are managed to enable the selection and

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ELEMENT	PERFORMANCE CRITERIA
	engagement of the most appropriate subcontractor. 4.4. Successful and unsuccessful tenderers are notified about the outcomes of the selection process. 4.5. Processes for commencement, induction and any required pre-engagement training are managed and implemented.
5. Evaluate subcontractor performance and compliance with contract requirements.	5.1. Systems that evaluate subcontractor performance and compliance with contract requirements are developed and managed. 5.2. Gathering of strategic information about subcontractor performance is managed under terms of confidentiality and security but within known collection parameters. 5.3. Performance review outcomes are discussed with subcontractors on a confidential and equitable basis. 5.4. Feedback and appeal systems are introduced and managed to ensure that subcontractors have the opportunity to challenge review outcomes. 5.5. Remedial or disciplinary action is undertaken against the subcontractor in accordance with organisational policy and operational guidelines where appropriate.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - communicate with subcontractors on all matters regarding selection and management
  - read and interpret:
    - industrial legislation and contract legal matters that impact on operations
    - subcontractor records and information

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REQUIRED SKILLS AND KNOWLEDGE

- review tender responses
- use and interpret non-verbal communication
- use language and concepts appropriate to cultural differences
- written skills to:
  - correspond with subcontractors
  - develop a management plan
  - record relevant information
- developing and managing subcontract tender and selection processes
- evaluation skills to undertake and manage subcontractor evaluations for the organisation and review subcontractor performance
- managing subcontractor resources in an equitable and non-discriminatory manner
- numeracy skills to apply calculations and estimate timeframes
- organisation and management skills to manage the development of job profiles and competency statements for subcontractor appointments.

Required knowledge

Required knowledge for this unit is:

- contracts and workplace agreements
- industrial relations structures and processes
- industry subcontracting system and industry benchmarks for subcontract personnel
- relevant licensing arrangements
- subcontractor administration and performance management systems.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by effective selection and management of building and construction contractors for medium rise projects against projected organisational activities and the business plan.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully

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EVIDENCE GUIDE

	replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • identify the subcontractor needs of the organisation based on an evaluation of organisation's projected work load and forward contractual commitments • assess the extent of effective systems introduced to review subcontractor performance and competency • implement an effective and efficient appointments process • implement an effective and efficient management of the system of subcontractor appointments to meet project timeframes • demonstrate remedial or disciplinary action for below standard subcontractor performance.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • documentation that should normally be available in either a building or construction office • relevant codes, standards and regulations • office equipment, including calculators, photocopiers and telephone systems • computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies • a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature

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EVIDENCE GUIDE

- copies of appropriate awards and workplace agreements
- a suitable work area appropriate to this process.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

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Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Subcontractor requirements include:

- calculating number of subcontractors required by the hours within the timeframe
- calculating quantum of hours required to perform the work
- determining total hours required for each function and stage of work
- estimating project timeframe from start to finish
- identifying work sequence and nature of job roles.

Reviewing subcontractor performance includes:

- anecdotal evidence, including input from project managers and administrators
- examination of data provided by the subcontractor
- input about subcontractor performance from other organisations
- observation of the subcontractor on other project sites
- using subcontractor performance records from previous associations.

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RANGE STATEMENT

Selection and engagement of subcontractors include:	• advising interviewees of the outcome of the selection process • arranging credit checks to determine subcontractor financial viability • ensuring selection interviews with subcontractors meet the criteria • providing invitations to tender for subcontract opportunities • reviewing tender responses and checking referees • undertaking contractual arrangements between the organisation and successful subcontractors.
Subcontractor performance and compliance with contract requirements include:	• establishment of performance benchmarks within subcontracts • participation by subcontractors in project meetings and provision of progress reports • performance management where performance is sub-standard or inappropriate • performance monitoring against project timelines and objectives • regular communication with subcontractors.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC5006B Apply site surveys and set-out procedures to medium rise building projects

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to apply site surveys and set-out procedures to medium rise building and construction projects. It addresses the skills and practices required to measure, record and interpret data using measuring and levelling equipment and to set out building projects. The ability to operate specific surveying equipment and apply calculations and knowledge of the Building Code of Australia (BCA) and Australian standards are essential.

Application of the Unit

Application of the unit

This unit of competency supports builders, surveyors and related construction industry professionals who have responsibility for conducting site surveys in preparation for medium-rise building and construction projects.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Set out a T-shaped or L-shaped building on a selected site with minimal profiles.	1.1. Site information and dimensions are identified from site plan and checked against plan drawings. 1.2. Survey pegs are measured to ensure correct identification occurred before pilot pegs are positioned. 1.3. Profiles pegs are set up on site at a working distance from pilot pegs and parallel to pilot line. 1.4. Marks to indicate outside of building or other structural members are made.
2. Prepare and test levelling devices.	2.1. Various components of levelling devices are identified. 2.2. Basic tests on levelling device accuracy are performed according to manufacturer specifications. 2.3. Effects of maladjustment in levelling devices are identified and recorded according to standard operating procedures.
3. Operate levelling devices.	3.1. Temporary adjustments to set up ***levelling equipment*** are carried out in accordance with standard operating procedures. 3.2. Horizontal and vertical angles are determined using levelling devices. 3.3. Site is set out to specifications using levelling devices.
4. Identify specialised levelling and surveying equipment available on large building projects for various set-out and checking procedures.	4.1. Differences between various types of specialised surveying equipment are researched and recorded. 4.2. Survey of each level checked for vertical accuracy of 10mm using two levelling devices is carried out.
5. Compute coordinates and bearings, distances related to grids and general set-out work on large building sites.	5.1. Angular relationship between different bearings (whole circle) is demonstrated. 5.2. Bearing and distance between coordinates are calculated. 5.3. Coordinates of a point given the bearing and distance from a point with known coordinates are calculated. 5.4. Offsets from a coordinated point given the bearing and distance from a point with known coordinates are determined.

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ELEMENT	PERFORMANCE CRITERIA
	5.5. Information necessary to set out a structure using a site plan is determined.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- application of design concepts and principles to survey and site set-out
- application of measurements and calculations to survey and site set-out
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - perform survey and levelling procedures with others
  - read and interpret:
    - drawings and specifications
    - state regulatory authority requirement
    - other relevant documentation
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- interpretation skills to understand documentation from a wide range of sources, including state regulatory authority requirements
- numeracy skills to apply measurements and calculations.

Required knowledge

Required knowledge for this unit is:

- application of design principles
- BCA and Australian standards and manufacturer specifications
- building systems and application to survey and site set-out
- level and grade checking used to perform survey control to accuracy criteria
- OHS measures as identified by equipment manufacturers and Australian standards
- relevant legislative requirements, codes and practices
- survey and levelling devices and effect of performance on site
- work drawings and specifications.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by applying survey and site set-out procedures and selection and use of two levelling devices to survey and set out building projects.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- accurately apply survey and levelling principles relating to performance of site set-out
- comply with OHS and organisational quality procedures and processes
- apply and interpret relevant documentation, codes and legislation
- use levelling devices to survey and set out building projects
- identify typical faults and problems and take necessary action taken to rectify
- identify hazard categories according to Australian standards, BCA and specifications.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- documentation, including design brief

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EVIDENCE GUIDE

	drawings, specifications, codes, design concepts, construction schedules and other necessary supporting documents • research resources, including systems information and data • access to relevant legislation, regulations and codes of practice. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge • all assessment that is part of a structured learning experience must include a

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combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Levelling equipment includes:

- electronic distance measuring (EDM) equipment
- laser
- optical plummets
- pegs methods
- theodolite.

Unit Sector(s)

Unit sector Construction

Co-requisite units

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Co-requisite units Nil

Functional area

Functional area

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CPCCBC5007B Administer the legal obligations of a building or construction contractor

Modification History

Minor editorial corrections to restore original intent to represent contractors rather than contracts, including associated change in unit title
Literacy skills required for completing legal documents and records made more explicit
Equivalent to CPCCBC5007A

Unit Descriptor

This unit of competency specifies the outcomes required to administer the legal obligations of a building or construction contractor, including obligations as either party to a contract. It is concerned with licensing and/or builders' registration and other legislative matters as appropriate, and administering the systems through which the obligations of complying with legislation are fulfilled.
In order to achieve the outcomes for this unit, knowledge of relevant industry legislation, codes, standards, regulations, licensing, employee awards, agreements, OHS, taxation and insurance is required.

Application of the Unit

This unit of competency supports the needs of builders, senior managers within building and construction firms and other construction industry personnel responsible for administering the legal obligations of a building or construction contractor for medium rise projects.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Comply with the laws relating to establishing and licensing a building or construction contractor.	1.1	Business registration of the organisation is secured in accordance with owner/operator preferences and legal requirements.
		1.2	Approval of ***licensing*** and registration as a contractor/supervisor is sought from appropriate government agency.
		1.3	Responsibilities of operating a construction business in accordance with legislation are met.
		1.4	Legal documents and records are kept and carefully maintained.
2	Engage personnel for the project.	2.1	Relevant industrial awards are identified for the hiring of staff or labour.
		2.2	Contracts of employment are determined on a case-by-case basis and the principles and legalities of workplace agreements are implemented.
		2.3	Equal opportunity principles are applied in all aspects of recruitment and selection.
		2.4	Procedures for employment termination and redundancy are explained and followed.
		2.5	Dispute resolution processes are established, documented and implemented where necessary.

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3	Administer the regulations relating to OHS, welfare, workers' compensation, noise abatement and working hours.	3.1	***OHS*** and ***Welfare*** Act provisions are identified and complied with, on and off the site.
		3.2	OHS authority is contacted to determine the necessary approvals or permits prior to work commencing.
		3.3	Provisions of ***Workers Compensation*** Act are complied with and the rights and responsibilities of workers are observed to ensure a safe workplace.
		3.4	Regulations relating to ***noise abatement*** and ***working hours*** are adhered to.
4	Implement rehabilitation arrangements for employees returning to work.	4.1	***Rehabilitation arrangements*** for employees returning from injury or illness are facilitated and implemented.
		4.2	Workers returning to work after injury or illness are assisted to regain full employment status as soon as practicable.
5	Comply with taxation and insurance requirements of federal, state and territory legislation.	5.1	***Taxation*** payments are recorded, collected and made in compliance with Australian Taxation Office requirements, including GST obligations.
		5.2	***Insurance*** policies are identified to provide appropriate cover for personnel, property and project works.
		5.3	Mandatory superannuation provisions are made for employees.
6	Administer all obligations in a conscientious manner and observe fair trading practice.	6.1	Fair trading practice responsibilities are maintained effectively and efficiently.
		6.2	Best interests of clients are promoted and undertaken conscientiously in accordance with the agreed contract.
7	Comply with environmental legislation and its intent.	7.1	Renewable materials are used as a primary aim wherever possible over non-renewable materials.
		7.2	Low energy materials are used in preference to high energy materials, where practical.

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7.3 Processes to ensure compliance with ***environmental protection legislation*** are implemented.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- language and literacy skills to:
  - complete legal documents and records
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - liaise with government agencies
  - provide information to employees
  - read and interpret:
    - contracts and regulations
    - industrial awards
    - legislation
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- manage compliance with a variety of legal obligations and administer various awards and agreements
- management skills to effectively manage personnel
- numeracy skills to apply measurements and calculations.

Required knowledge

Required knowledge for this unit is:

- awards and agreements applying to employees and subcontractors
- legislative requirements, including:
  - environmental legislation
  - fair trading legislation
  - taxation and insurance requirements
- licensing and builders' registration requirements
- local authority regulations
- OHS and rehabilitation requirements
- relevant licensing arrangements.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by effective administration of legal obligations of a building or construction contractor.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- conform to the legal and financial obligations of the organisation
- establish and maintain good human relations with contracted employees, subcontractors and other stakeholders
- manage organisational taxation and insurance obligations successfully
- effectively advise appropriate authorities and gain the necessary approvals or responses
- promote and work in the best interest of clients.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- documentation that should normally be available in either a building or construction office
- relevant codes, standards and regulations

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- copies of appropriate awards and workplace agreements
- office equipment, including calculators, photocopiers and telephone systems
- a suitable work area appropriate to the process.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the

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competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Licensing includes state laws, such as:

- Builders Registration Act 1939
- Home Building Contracts Act 1991 in Western Australia
- Home Building Act and Regulations 1989 in New South Wales.

OHS, welfare, workers' compensation, noise abatement and working hours include:

- state codes of practice applicable to the various regulations
- state laws, such as:
  - Occupational Health and Safety Act 1983 in New South Wales
  - Occupational Health and Safety Act 1984 in Western Australia
  - Occupational Health and Safety Act 1985 in Victoria
  - Occupational Health and Safety Act 1986 in South Australia
  - WorkCover Queensland Act 1996
  - Workers Compensation and Rehabilitation Act 1981 in Western Australia
  - Workplace Injury Management and Compensation Act 1998 in New South Wales
- state regulations such as the Occupational Health and Safety Regulations 1996 in Western Australia
- various federal, state and territory industrial relations Acts and regulations.

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Rehabilitation arrangements for employees returning to work include:	• cooperation with rehabilitation agencies • light duties • normal duties under shorter working hours • suitable alternative duties.
Taxation and ***insurance*** requirements of state, territory and federal legislation include:	• appropriate business and project insurances • Fringe Benefits Tax Act 1986 • Goods and Services Tax Act 1999 • Income Tax Assessment Act 1987 • Insurance Contracts Act 1984 • pay-as-you-go (PAYG) taxes • payroll tax • stamp duty • workers' compensation.
Environmental protection legislation includes:	• federal, state and territory environmental legislation and regulations applicable to the building and construction industry.

Unit Sector(s)

Functional area

Unit sector Construction

Custom Content Section

Not applicable.

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CPCCBC5009A Identify services layout and connection methods to medium rise construction projects

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to identify drawings, specifications and requirements for services in a range of medium rise and wide span commercial projects.

It requires an ability to identify and evaluate differing methods and services in accordance with building regulations and standards.

Application of the Unit

Application of the unit

This unit of competency supports builders, project managers and related construction industry professionals responsible for identifying and evaluating service requirements in various medium rise construction projects.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Evaluate commonly used methods of water storage supply and layouts.	1.1. ***Water supply***, connection and layout are sketched for a residence connected to a town supply or a tank storage supply in accordance with relevant building regulations and standards. 1.2. Use of pumps to maintain water levels in storage tanks is documented for single and two-stage pumping. 1.3. Limitations of water storage tanks connected for multi-function and single function services are identified and addressed.
2. Evaluate methods of sewerage and drainage disposal and their layouts.	2.1. ***Sewerage connection and layout*** are sketched in accordance with relevant building regulations and standards. 2.2. Different stack types are assessed with reference to number of fixtures and building type. 2.3. Fixture units are identified. 2.4. Methods used to connect main drains to local authority sewers are assessed against relevant building standards. 2.5. Disposal of sewerage from fixtures situated below the level of the local authority sewer is assessed in accordance with relevant building regulations and standards. 2.6. Collection, treatment and disposal of prohibited discharges are monitored for non-domestic buildings.
3. Assess commonly used methods for mechanical ventilation and air distribution and their layout.	3.1. ***Methods of mechanical ventilation*** and air distribution are identified and sketched. 3.2. Mechanical ventilation and air distribution system design layout is appropriate to the building design and complementary to other services.
4. Evaluate the range of hot water systems.	4.1. Operating principles of various types of hot water systems are evaluated. 4.2. Suitable ***hot water system*** is selected according to accepted and agreed requirements and specifications.
5. Evaluate effective natural lighting for a range of situations.	5.1. Methods of roof construction used for daylight transmission are identified and outlined in accordance with relevant building regulations and standards. 5.2. Methods used in artificial ***lighting*** are compared for various service situations in accordance with relevant

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ELEMENT	PERFORMANCE CRITERIA
	building regulations and standards.
6. Ensure fire protection standards are met.	6.1. Authorities involved in plan perusal and site inspection for the various building classifications are identified. 6.2. Requirements for sprinkler systems and fire hoses for the various building classifications are identified according to legal and regulatory standards. 6.3. Fire detector and alarm systems and the application of fire doors are addressed according to legal and regulatory standards. 6.4. Extinguishing agents and their applications are identified.
7. Outline the requirements for general electrical and electronic service installation.	7.1. Electrical supply authorities and procedures for connection to site are identified and complied with. 7.2. Electrical design and provision for services are implemented in accordance with regulations and Australian standards. 7.3. ***Electronic cabling***, type of service, categories of cabling, layout of equipment, safe guards, access for maintenance, repair and extensions are identified and outlined in accordance with regulations and Australian standards.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- application of design concepts and principles relating to service installations
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret:
    - service installation drawings and specifications
    - state regulatory authority requirements
  - use and interpret non-verbal communication

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REQUIRED SKILLS AND KNOWLEDGE

- use language and concepts appropriate to cultural differences
- written skills to document relevant information
- numeracy skills to apply measurements and calculations relating to service installations.

Required knowledge

Required knowledge for this unit is:

- Australian standards and manufacturer specifications
- design concepts and principles relating to service installations
- hazards in relation to devices and systems used according to Australian standards and other codes or standard operating procedures
- installation methods
- nature of materials and effect on performance relating to service installations
- relevant licensing arrangements
- service installation terminology and definitions
- work drawings and specifications.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by the effective performance and application of principles relating to service drawings, specifications and methods of determining requirements for services to a range of medium rise and wide span commercial constructions.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- comply with OHS and organisational quality procedures and processes within the context of this unit of competency
- apply and interpret relevant documentation, codes and legislation relating to performance of service installations
- accurately apply principles relating to performance of service installations
- identify typical faults and problems and take necessary action taken to rectify
- identify service installations and hazard categories according to Australian standards, Building Code of Australia (BCA) and job specifications.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory

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EVIDENCE GUIDE

	or Australian standards' requirements. Resource implications for assessment include: • documentation, including design brief drawings, specifications, codes, design concepts, construction schedules and other necessary supporting documents • research resources, including systems information and data • access to relevant legislation, regulations and codes of practice. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete

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EVIDENCE GUIDE

	confidence in the person's demonstrated ability and applied knowledge • all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed. Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Water supply includes:	• single and two-stage pumping for multi-function and single function • tank storage supply relative to the public water supply and reservoir heights • town supply.
Sewerage connection and layout include:	• graded or vertical discharge pipes • inspection shafts and overflow relief gullies (ORGs) • local authority sewerage drainage system • septic or biochemical treatment unit.
Methods of mechanical ventilation include:	• air conditioning applications • air distribution, including mechanical ventilation requirements for enclosed car parks • air filtration, including air filters, ducting and

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RANGE STATEMENT

	main filter types • mechanical ventilation.
Hot water system details include:	• area to be serviced • energy sources available • height of installation • number of outlets • type of occupancy • type of system.
Lighting for varying situations includes:	• emergency lighting • natural and artificial lighting.

Electronic cabling factors include:	• access for maintenance, repair and extension
	• categories of cabling:
	  • data
	  • lift controls
	  • power supplies
	  • telecommunications
	• layout of equipment:
	  • computers
	  • telephones
	• safe guards
	• type of service.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

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Functional area

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CPCCBC5010B Manage construction work

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to manage construction work and/or projects, which may involve fulfilling single or multi-site commercial contractual obligations.

To successfully manage construction projects requires knowledge of relevant industry legislation, codes, standards, methods, procedures and practices as well as the ability to communicate effectively with others.

Application of the Unit

Application of the unit

This unit of competency supports builders, related construction industry professionals and senior managers within building and construction firms responsible for managing medium rise construction work and/or projects for commercial building projects.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish site communication processes.	1.1. ***Site communication*** processes are established and managed to comply with organisational quality management requirements. 1.2. Dates and times of site meetings are organised and relevant personnel are notified.
2. Establish and review OHS, welfare and risk management procedures.	2.1. Organisational requirements for on-site first aid facilities are identified, established and reviewed in accordance with relevant ***OHS***, ***welfare and risk management*** legislation and regulations. 2.2. Plant and equipment usage policy and practices that require certificated operators are established and managed to comply with risk management procedures. 2.3. Hazard management procedures are established and implemented, and precautionary measures are instigated. 2.4. Responsibilities for safe handling of materials are addressed through organisational policy and procedures. 2.5. Construction safety procedures are established and managed in accordance with OHS, welfare and risk management requirements and key personnel are identified. 2.6. Safety induction procedures are established and managed in the event of dangerous incidents, injuries and accidents. 2.7. Safety reporting processes and documentation are developed and implemented in accordance with organisational and legislative requirements.
3. Manage supply of materials and installation of equipment.	3.1. Process for placing orders for materials is established and managed to ensure the timely and cost effective ***supply of materials and installation of equipment***. 3.2. Procedures are established, managed and monitored for equipment hire and maintenance.
4. Manage on-site operations.	4.1. ***On-site operations*** are managed to implement and maintain a safe and cost-effective work environment in accordance with appropriate schedules and the contract. 4.2. Subcontractor operations are managed and coordinated to ensure compliance with company obligations.

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ELEMENT	PERFORMANCE CRITERIA
	4.3. System to deal with problems and delays affecting performance is established and managed.
	4.4. Processes to manage industrial relations are established in accordance with company policy and regulatory guidelines.
	4.5. Revisions are made to project schedules when required and variations are documented to comply with quality management procedures.
	4.6. Project quality management is effectively implemented to provide for a continuous improvement environment in which safety procedures are monitored continuously, reports are analysed and procedures reviewed as required.
	4.7. Contact with statutory authorities and parties to the contract are facilitated when variations are made to approved contract drawings and specifications.
	4.8. Multi-site management plans are implemented in accordance with organisational policy and site conditions.
5. Manage the processing of progress claims and payments.	5.1. Progress claims are managed and approved in accordance with contract requirements.
	5.2. Project expenditure is managed and claims against scheduled projected costs are checked for accuracy.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - liaise with subcontractors, staff and clients, as well as with local or regulatory authorities on matters relating to site conditions or approvals
  - notify personnel of meetings
  - read and interpret:

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REQUIRED SKILLS AND KNOWLEDGE

    - documentation from a variety of sources
    - plans, specifications and drawings
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to:
    - complete site communication requirements
    - record and report relevant information
- establishing, implementing and maintaining a safe working environment
- financial management skills to ensure that progress payments are made on time and on the basis of work successfully completed
- management skills in order to manage personnel and resources to effectively achieve contract or project objectives
- negotiation skills to enable effective negotiation on industrial relations issues
- numeracy skills to apply calculations
- problem solving skills to effectively resolve problems relating to construction methodologies or practices.

Required knowledge

Required knowledge for this unit is:

- environmental management procedures to ensure compliance with regulatory requirements
- hazard management processes
- nature and style of building and construction industry contracts
- OHS frameworks and obligations under federal, state or territory legislation and regulations
- quality management processes and procedures as they apply to the building and construction industry
- relevant licensing arrangements
- relevant state or territory building and construction codes, standards and regulations
- risk management processes and practices
- workplace safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed by the effective management of construction work or projects. This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • effectively and efficiently procure resources • communicate effectively both verbally and in writing with suppliers and subcontractors • complete documentation to organisational standards • deal with variations to contracts • implement effective processes for maintaining site safety and managing risks.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • documentation that should normally be available in either a building or construction office • relevant codes, standards and regulations • office equipment, including calculators, photocopiers and telephone systems

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EVIDENCE GUIDE

- computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies
- a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature
- a suitable work area appropriate to the construction process.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

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- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Site communication includes:

- emails and faxes
- face-to-face verbal communication
- mobile and fixed telephone contact
- site diaries
- written reports and memoranda.

OHS, welfare and risk management includes:

- adherence to organisational policies and procedures for:
  - duty of care
  - hazard identification and rectification
  - safe work practices
- compliance with federal, state and territory legislation and regulatory requirements
- rehabilitation of injured workers
- safe handling of materials and equipment.

Supply of materials and

- concrete and pre-formed concrete

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RANGE STATEMENT

installation of equipment include:	• electrical cabling • fire suppression systems • lifting equipment • plumbing and gas piping systems • raw construction materials, such as sand, aggregate, timber and cement • sarking, insulation, air conditioning ducting and roofing • temporary lighting and power outlets • waste water disposal systems.
On-site operations include:	• allocation and management of human resources • communication with regulatory authorities and compliance with their requirements • dispersal and programming of heavy equipment, including wheeled and tracked earthmoving vehicles • dispute resolution • maintenance of environmental controls and obligations • managing expenditure • placing orders for supplies or equipment.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC5011A Manage environmental management practices and processes in building and construction

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to manage environmental management practices and processes in building and construction, as part of the organisation's overall management system.

To successfully manage practices and processes requires knowledge of current trends in environmental practices and methodologies, statistical analysis and legislative requirements.

Application of the Unit

Application of the unit

This unit of competency supports the needs of builders, senior managers and other construction industry professionals responsible for managing environmental practices and processes for medium rise building and construction projects.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare an environmental management plan for the organisation.	1.1. Current shifts in environmental legislation or regulations are analysed in relation to their potential impact on the organisation. 1.2. ***Best practice and benchmarking methods*** are used to determine current environmental management performance. 1.3. Project environmental obligations and management requirements are analysed. 1.4. ***Environmental management plan*** is prepared on the basis of available information. 1.5. Senior management advice concerning implementation of plan is sought as required.
2. Manage implementation of environmental management plan.	2.1. Staff and contractors are informed of their obligations in implementing the environmental planning process and are monitored for compliance. 2.2. ***Environmental data gathering systems*** are evaluated, changes are made as necessary, and system is managed for maximum efficiency and accuracy. 2.3. New projects are evaluated to determine their impact on existing environmental planning obligations. 2.4. Local authorities and regulatory bodies are contacted where the plan requires ongoing external monitoring or overseeing. 2.5. Information concerning updates to the environmental management plan is communicated to staff and stakeholders. 2.6. Environmental management plan evaluation strategy is developed and managed to ensure that the organisation remains on track in the event of changing circumstances.
3. Monitor environmental management plan to ensure that it meets organisational legal obligations.	3.1. Organisational ***feedback systems*** are implemented and managed to assist conformance and management of plan. 3.2. Regular feedback is obtained concerning the operations of the environmental management plan to assist the organisation to meet its legal obligations. 3.3. Where necessary, legally required auditing practices to ensure probity and accountability towards legislative requirements are managed and maintained. 3.4. Contact with contractors is maintained and their

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ELEMENT	PERFORMANCE CRITERIA
	compliance with environmental management requirements is monitored.
	3.5. Emergency and remediation response strategies are implemented as necessary to assist compliance with the environmental management plan.
4. Evaluate and recommend changes to environmental management plan.	4.1. Environmental management plan is reviewed to identify areas that need improvement, and action is taken.
	4.2. Measures are introduced to assist staff to suggest more efficient procedures and innovations to improve the performance of the environmental management plan.
	4.3. Plans are redrafted to include improvements or address deficiencies found during the monitoring.
	4.4. Revised plans are submitted for endorsement by senior management and procedures are changed accordingly.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- analytical skills, including the ability to assess variations in environmental management performance and identify reasons for those variations
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - liaise with subcontractors, staff and clients, as well as with local or regulatory authorities on matters relating to site conditions or approvals
  - notify personnel of meetings
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences

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REQUIRED SKILLS AND KNOWLEDGE

- written skills to:
  - complete site communication requirements
  - record and report relevant information
- numeracy skills to apply calculations
- evaluation skills to evaluate previous environmental management performance and identify strengths and weaknesses of the process
- management skills, including the ability to develop and implement environmental management plans that improve organisational compliance with environmental obligations and responsibilities
- problem solving skills, including the ability to identify environmental management issues and address these before they become contentious or dangerous
- staff management skills to effectively manage personnel in the administration of organisational environmental management systems.

Required knowledge

Required knowledge for this unit is:

- benchmarking and the establishment of environmental goals
- current trends in environmental management and controls
- environmental management practices and methodologies
- legal and regulatory obligations implicit in environmental requirements
- penalties for various breaches of environmental obligations and conformance requirements
- relevant licensing arrangements
- statistical analysis methodologies.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed by effective management of building or construction environmental management practices and processes in medium rise building or construction projects. This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • develop effective environmental management action plans and strategies • determine the extent of effective environmental management advice provided to the organisation • assess the effectiveness and efficiency of the environmental management recording and reporting systems and preparation of documentation to organisational standards • assess variations in environmental management performance • implement an effective process to manage improvements to organisational environmental management practices and to reduce the risk of non-conformance • comply with relevant legislative and regulatory requirements • research relevant current trends in environmental management and controls.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

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EVIDENCE GUIDE

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- documentation that should normally be available in a building or construction office
- relevant codes, standards and regulations
- office equipment, including calculators, photocopiers and telephone systems
- computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies
- a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature
- copies of appropriate awards and workplace agreements
- a suitable work area appropriate to the construction process.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

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EVIDENCE GUIDE

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Best practice and benchmarking methods include:

- comparisons of current, previously established and external environmental management plans
- costs associated with environmental

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RANGE STATEMENT

	conformance • formally or informally prepared performance indicators against environmental management objectives • performance measurements against industry, local authority, regulatory or world standards • specific environmental targets, including emissions, noise, dust, waste disposal, storm and ground water disposal, waste segregation and hazardous materials • statistical record-keeping, using at start, ongoing and at conclusion measurements • strategic comparisons of resources in and residuals out.
Environmental management plan includes:	• environmental prohibitions or restrictions to be applied within specific projects • formally or informally gathered information concerning environmental issues and requirements • key people to be consulted or included in decision making • specific forms of activity to be pursued or which are subject to monitoring or evaluation • timeframes and key environmental benchmarks to be achieved.
Environmental data gathering systems include:	• conformance reporting on achievement of milestones or performance targets • formal and informal reports from employees and contractors • scheduled environmental management meetings and briefings • statistical and analytical data in support of environmental management objectives.
Feedback systems include:	• feedback from regulatory authorities • formal and informal information gathering from employees and contractors • specifically documented processes using formal reporting arrangements • spot checks on aspects of the environmental management process.

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Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC5012A Manage the application and monitoring of energy conservation and management practices and processes

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to manage the application and monitoring of energy conservation and management practices and processes within the building and construction industry. Successful application of the unit requires knowledge of energy management practices and methodologies, statistical analysis, current trends and factors in energy conservation, and legislative and regulatory requirements.

Application of the Unit

Application of the unit

This unit of competency supports the needs of builders, senior managers within building and construction firms and other industry professionals responsible for managing energy conservation and management practices and processes in medium rise building and construction projects.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare an energy conservation and management plan for the organisation.	1.1. Organisational policy and operational guidelines for energy conservation and management are reviewed. 1.2. ***Best practice and benchmarking methods*** are used to determine current energy conservation and management performance. 1.3. Opportunities for energy conservation and savings are identified within the immediate work area and on project sites. 1.4. Staff and contractors are asked for ideas and suggestions concerning organisational energy conservation. 1.5. ***Energy conservation and management plan*** is prepared on the basis of available information. 1.6. Advice is sought from senior management, as required, concerning implementation of the plan.
2. Manage the energy conservation and management plan.	2.1. Staff and contractors are informed of their obligations in implementing the energy conservation and management plan and are monitored for compliance. 2.2. ***Energy data-gathering systems*** are evaluated, changes are made as necessary, and system is managed for maximum efficiency and accuracy. 2.3. New projects are evaluated to determine their impact on existing energy conservation planning obligations. 2.4. Participation by contractors in the achievement of plan's objectives is encouraged and monitored. 2.5. Difficulties, obstructions or factors that impact on the achievement of the energy conservation plan are identified and measures are taken to address them. 2.6. Information concerning updates to the plan is communicated to staff and stakeholders. 2.7. Environmental management plan evaluation strategy is developed and managed to ensure that organisational objectives are achieved.
3. Monitor the energy conservation and management plan to ensure organisational objectives are being met.	3.1. Organisational ***feedback systems*** are implemented and managed to assist with compliance with and management of the plan. 3.2. Regular feedback is obtained from staff and contractors concerning the efficiency of the operations of the energy conservation and management plan.

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ELEMENT	PERFORMANCE CRITERIA
	3.3. Energy savings are identified and promoted throughout the organisation.
	3.4. Energy wastage is reported and strategies are implemented as necessary to assist with compliance with the energy management plan.
4. Evaluate and recommend changes to the energy conservation and management plan.	4.1. Energy conservation and management plan is reviewed to identify areas needing improvement and action is taken.
	4.2. Measures are introduced to encourage staff to suggest more efficient procedures and innovations to improve the performance of the energy conservation and management plan.
	4.3. Plans are redrafted to include improvements or address deficiencies identified during monitoring.
	4.4. Revised plans are submitted to senior management for endorsement and procedures are amended accordingly.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- analytical skills, including the ability to assess variations in energy management performance and identifying reasons for those variations
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - liaise with local authorities, regulatory agencies and clients
  - provide information
  - read and interpret documents from a variety of sources
  - seek advice and feedback
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to prepare and revise an energy conservation and management plan

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REQUIRED SKILLS AND KNOWLEDGE

- numeracy skills to carry out statistical analysis and apply calculations
- evaluation skills to evaluate previous energy conservation and management performance and identify strengths and weaknesses of the process
- management skills, including the ability to develop and implement energy conservation and management plans that improve organisational achievements in regard to energy saving objectives
- problem solving skills, including the ability to identify energy conservation and management issues and address these before they become contentious
- staff management skills in order to effectively manage personnel in the administration of organisational energy conservation and management systems.

Required knowledge

Required knowledge for this unit is:

- benchmarking and the establishment of energy conservation goals
- current trends and factors in energy conservation and management
- energy management practices and methodologies
- organisational policies and practices supporting energy conservation and management
- relevant legislative and regulatory requirements and standards
- relevant licensing arrangements
- statistical analysis methodologies.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed by effective management of the application and monitoring of energy conservation and management practices and processes on medium rise building and construction projects. This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • develop effective energy conservation and management action plans and strategies • assess extent of effective energy management advice provided to the organisation • determine effectiveness and efficiency of the energy conservation and management recording and reporting systems and preparation of documentation to organisational standards • implement effective processes to manage improvements to organisational energy conservation and management practices and reduce the non-conforming practices • research current trends in energy conservation and management • conform to relevant legislative, regulatory and organisational requirements.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge

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EVIDENCE GUIDE

will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- documentation that should normally be available in a building or construction office
- relevant codes, standards and regulations
- office equipment, including calculators, photocopiers and telephone systems
- computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies
- a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature
- a suitable work area appropriate to the construction process.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role

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and the practical requirements of the workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Best practice and benchmarking methods include:

- comparisons of current, previously established and external energy conservation and management plans
- costs associated with optimum environmental conformance
- formally or informally prepared performance

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RANGE STATEMENT

	indicators against energy management objectives • performance measurements against industry, local authority, regulatory or world standards • specific energy targets, including electrical power usage and fuel usage, heat loss and thermal efficiency • statistical record keeping, using at start, ongoing and at conclusion measurements.
Energy conservation and management plan includes:	• formally or informally gathered information concerning energy issues and requirements • key people to be consulted or included in decision making • specific forms of activity to be pursued or which are subject to monitoring or evaluation • timeframes and key energy conservation benchmarks to be achieved.
Energy data-gathering systems include:	• formal and informal reports from employees and contractors • reports from supply organisations • scheduled energy conservation management meetings and briefings • conformance reporting on achievement of milestones or performance targets • statistical and analytical data in support of energy management objectives.
Feedback system includes:	• feedback from supply authorities • formal and informal information gathering from employees and contractors • specifically documented processes using formal reporting arrangements • spot checks on aspects of the energy management process.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC5013A Develop professional technical and legal reports on building and construction projects

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to develop professional technical and legal reports on buildings and commercial construction projects.

The unit requires knowledge of relevant legislation, codes, standards and regulations, contract documentation and construction planning and practices, as well as the ability to communicate effectively.

Application of the Unit

Application of the unit

This unit of competency supports the needs of builders, senior managers, building consultants and other construction industry personnel responsible for developing professional technical and legal reports on building and commercial construction projects.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Perform pre-purchase property inspections and assessments.	1.1. Building is inspected and ***defects*** are identified and documented in the agreed level of detail requested by client. 1.2. Engineers' certificates are obtained according to the state of repair or number and type of defects. 1.3. Rectification costs are estimated to degree of accuracy required or recommendations are made to demolish structure. 1.4. At the direction of government agencies, financial institutions or investment houses ***feasibility studies*** are conducted.
2. Advise and coordinate the design process and planning approval.	2.1. Project brief is prepared on behalf of client. 2.2. Site conditions and structure are assessed. 2.3. Preliminary design drawings are produced or obtained and probable costs are estimated. 2.4. Process is coordinated through which final design documentation will be completed and approved by client. 2.5. Documentation is submitted to obtain authorised ***planning approval*** for the project. 2.6. Planning appeals are prepared and presented to the authority if necessary.
3. Review building or construction works.	3.1. Contract documentation is checked to ensure client interests are protected. 3.2. ***Building or construction works*** are regularly monitored and reports are provided on the progress and quality of work. 3.3. Variations are checked and referred back to contractors as required. 3.4. Progress claims are checked and approved.
4. Provide advice on dispute resolution.	4.1. Disputes are negotiated on behalf of the client. 4.2. Impartial advice is provided to the parties involved in a building related dispute for equitable settlement. 4.3. Referrals are provided for expert legal interpretation of contractual matters. 4.4. Expert testimony and evidence are provided in the event of disputes going to court.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - negotiate disputes
  - provide advice and referrals
  - read and interpret documents from a variety of sources
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to:
    - document defects
    - prepare relevant documentation
- evaluation skills, including the ability to review and evaluate documentation and processes and recommend changes or improvements
- numeracy skills to apply calculations
- planning skills to ensure effective planning of projects, processes and strategies that maximise the efficiency and cost-effectiveness of building or construction contracts
- supervisor skills to ensure staff achieve planning outcomes.

Required knowledge

Required knowledge for this unit is:

- building and construction industry contracts
- building and construction industry subcontracting system
- building and construction practices in on and off-site management
- construction planning process
- contract documentation, quantities establishment, rates and costs related to payments and claims
- human resource principles and practices
- relevant licensing arrangements
- relevant state or territory building and construction codes, standards and regulations
- workplace safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by effective development of technical and legal reports for construction projects.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- effectively translate contract requirements into feasibility studies and advice on building, site use, plans and processes
- demonstrate quality construction planning processes and effective outputs
- develop strategies that maximise the effectiveness of resources
- advise and coordinate the design process and obtain planning approval
- oversee building or construction works to effect contractual outcomes.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- documentation that should normally be available in either a building or construction office

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	• relevant codes, standards and regulations • office equipment, including calculators, photocopiers and telephone systems • computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies • a technical reference library with current publications on measurement, design, building construction and manufacturer's product literature • copies of appropriate awards and workplace agreements • a suitable work area appropriate to the construction process. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances

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assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Defects are identified through property inspections that include:

- adjoining properties
- confirmation of boundaries
- on-site inspections of buildings, structures or features
- site access and egress
- topographical and geological surveys.

Feasibility studies:

- include information relating to:
  - architectural or engineering practicalities
  - availability and quantum of finance
  - availability of services and conditions

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RANGE STATEMENT

	governing service provision • change of use for existing buildings • confirmation of ownership • development on vacant land • encumbrances or caveats on property • environmental factors or constraints • existing buildings/structures for a given purpose • feasibility studies may be conducted on: • most cost-effective method of building for a given site or location • refurbishment costs of buildings/structures • special conditions that may apply to developments.
Planning approval includes:	• engineering approvals by architectural or design consultants • environmental approvals by Environment Protection Authority (EPA) or local authorities • final design or specification client approvals • finance approvals by lending bodies • zoning and compliance with laws and by-laws by local authorities.
Building or construction works include:	• construction of roads and pathways • demolition of existing structures • erection of new structures • installation of underground cabling • refurbishment of existing structures • renovations and extensions • site levelling or contouring • stormwater disposal and site drainage.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC5014A Conduct asbestos assessment associated with removal

Modification History

New to CPC08
Replaces unit CPCCBC4023A Plan and undertake site inspection and assessment of asbestos products and materials
Not equivalent

Unit Descriptor

This unit of competency specifies the outcomes required for assessors to visually inspect and use a range of measuring devices to undertake the monitoring of airborne asbestos fibres in the workplace as an integral part of identifying hazards, assessing risks, monitoring the effectiveness of controls, and ensuring that the workplace is free of asbestos fibres prior to reoccupation.
The unit includes the planning of the monitoring process, the selection and use of processes and air-monitoring equipment, the conduct of the assessment process, and the proper handling and interpretation of results.
Asbestos assessment and air monitoring are required during all friable (Class A) asbestos removal and for non-friable asbestos removal where a risk assessment indicates that airborne asbestos fibres may result from the removal activity.

Application of the Unit

Site location for work may be either domestic or commercial, and may be a demolition site, a new work site or an existing structure being renovated, extended, restored or maintained. Project sites may be construction sites and may also include ships, soils and fences.

Licensing/Regulatory Information

Occupational licenses are required nationally.
Work must be completed according to relevant legislative, code of practice, industry, customer and organisational requirements, including work health and safety (WHS) policies and procedures. Testing must conform to National Association of Testing Authorities (NATA) or other accredited laboratory requirements and standards.
Regulatory mechanisms apply to this unit. Candidates are advised to check for regulatory requirements.

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Pre-Requisites

CPCCOHS1001A Work safely in the construction industry

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan for assessment process of asbestos removal.	1.1	Scope, timelines and budget for the project are negotiated with the client and asbestos removalist or supervisor.
		1.2	***Type of asbestos containing material*** (ACM), its location, friability and condition are identified by reference to the asbestos register and consultation with workplace personnel and client.
		1.3	***Legislation, regulations, code of practice and standards*** are researched and confirmed to inform the planning process, identify risk and ensure a compliant and ***independent assessment*** process.
		1.4	Required reports are identified and undertaken in a timely manner and according to the requirements of the specific audience and the legislation, regulations, code of practice and standards.
		1.5	***Characteristics*** of and health impacts from exposure to ACM and the rationale for air-monitoring processes are researched and confirmed.
		1.6	***Accreditation framework*** and roles and responsibilities

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			of personnel involved are identified and understood.
		1.7	Processes used in the ***compliant removal*** of friable and non-friable asbestos using enclosures and leak testing, decontamination units, airline respirators and negative pressure equipment are identified and understood.
		1.8	***Work-site documentation*** is collected, reviewed and used to inform the planning process.
		1.9	***Areas within the work site*** where measurements are to be taken are defined.
		1.10	Measuring equipment specific to the hazard and condition of the ACM, the environment, the activities being carried out and level of risk is selected.
		1.11	Limits of own expertise and available equipment are recognised and expert advice and equipment sought as appropriate.
		1.12	Equipment, including ***personal protective equipment*** (PPE), required to carry out the job is identified and sourced.
		1.13	Planning is documented and confirmed with the client, asbestos removalist and supervisor.
2	Prepare to collect site measurements and other data.	2.1	Arrangements are made with work site to collect information and data, including advising those involved of requirements to facilitate the measurement and monitoring process.
		2.2	Site visit is conducted and a visual inspection is completed according to legislation, regulations, code of practice and standards.
		2.3	Effective ***air monitor locations*** for each asbestos removal task are identified and recorded.
		2.4	Sampling process is defined according to the standards specified for ***membrane filter method*** for estimating airborne asbestos fibres and in consultation with relevant site personnel.
		2.5	Sampling schedule and ***strategy*** are defined after site inspection and in consultation with asbestos removalist and work site manager or supervisor.

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		2.6	Air-monitoring program consisting of locations and schedule is developed and provided to asbestos removalist and supervisor.
		2.7	***Operability*** of monitoring equipment is checked according to manufacturer specifications, organisational procedures and professional standards.
3	Use measuring devices to collect site information and data.	3.1	Air-monitoring ***equipment*** is selected, ***calibration records are checked***, equipment is calibrated and appropriate flow rate is determined according to accredited laboratory requirements and professional standards.
		3.2	***Equipment*** is used and maintained correctly to accurately collect data.
		3.3	Workplace safety procedures are followed during the collection process.
		3.4	Required volumes of samples are collected with minimum damage and disruption to the fabric, according to the membrane filter method, labelled and the filter holders replaced according to the sampling schedule and plan.
		3.5	***Information and data are collected*** and results recorded noting where samples were taken and ensuring compliance with chain of custody protocols.
		3.6	Processes are put into place and checks made to ensure all data is collected under the control of a NATA or other accredited laboratory and according to industry standards and legislative requirements.
		3.7	Equipment is dismantled, decontaminated and parts or equipment disposed of according to regulations, code of practice and workplace procedures.
		3.8	Equipment is stored correctly or made ready for re-use.
		3.9	Sampling equipment is serviced and maintained according to professional standards and manufacturer specifications.

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4	Complete the monitoring process.	4.1	Filter is labelled and prepared for despatch to the laboratory, ensuring correct handling procedures for filters and chain of custody requirements.
		4.2	Confirmation of the exact nature of fibres is sought where necessary.
		4.3	Samples are retained and stored in labelled containers.
		4.4	Site set-up, removal, breakdown and decontamination procedures are overseen according to legislative and code of practice requirements.
		4.5	Documentation and processes to ensure the compliant transportation of samples are implemented.
5	Evaluate and document results of monitoring process according to accredited laboratory requirements.	5.1	Results received from the NATA or other accredited laboratory are interpreted and evaluated against the recognised standard.
		5.2	Further calculations are performed as required on the technical data received from the NATA or other accredited laboratory.
		5.3	Outcomes from the technical analysis are documented.
		5.4	Concise, logical and accurate ***report*** is prepared that addresses regulatory requirements and is in the form required by ***audience***.
		5.5	Work site is visually inspected to ensure compliance with procedures prior to issuing a clearance certificate.
		5.6	Clearance certificate is completed according to legislative, regulatory and code of practice requirements.
		5.7	Recommendations are made regarding exposure and control monitoring processes.
		5.8	Results and records are retained and stored in a readily retrievable format according to regulatory requirements and standards.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication, and appropriate level of language skills, to:
  - determine requirements
  - prepare documentation (including air-monitoring report) that is accurate, clear and complete
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow and give instructions
  - liaise with related professionals, including facility managers, building owners, building surveyors and testing authorities
  - manage conflict between internal and external stakeholders
  - read and interpret:
    - complex testing results and reports from NATA or other accredited laboratories
    - documentation from a variety of sources
    - drawings and specifications
  - use language and concepts appropriate to cultural differences
- initiative and enterprise skills to identify and report faults in tools, equipment and materials
- planning and organising skills to plan and set out work
- teamwork skills to:
  - coordinate own work
  - liaise with workplaces
  - supervise the work of others
  - relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- self-management skills to:
  - work independently and respond effectively to timelines, deadlines and complex work requirements
  - check and evaluate the asbestos removal area according to the safe work method
  - use, fit and maintain PPE, decontamination equipment, hand and power tools safely
  - apply general WHS requirements for work in the construction industry
  - apply safe work methods for the removal of testing samples of friable and non-friable asbestos
  - apply inspection, sample collection, testing, evaluation and reporting techniques and protocols that comply with NATA and other accredited laboratory requirements and

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professional standards
- apply chain of custody protocols that comply with NATA and other accredited laboratory requirements and professional standards
- follow correct decontamination procedures

Required knowledge

- range of materials manufactured using asbestos, the type and characteristics of asbestos used in each material, and the usual applications associated with the material
- methods and purpose for assessing hazards relating to friable ACM, together with an understanding of:
  - health effects caused by exposure to ACM and requirement for safe handling and removal
  - health impacts on the community and requirement for safe handling and disposal
- requirements of current legislation and standards relating to asbestos safety, the preparation of an asbestos removal control plan (ARCP), and issuance of air-monitoring clearance certificates and related documentation, including:
  - understanding the trigger points for stopping work
  - detailed knowledge of the membrane filter method
  - detailed understanding of the clearance certificate
- rationale for, and principles underpinning, the ARCP, air monitoring and related legislation
- requirements for professional indemnity and other insurances required by legislation and to mitigate business risk
- air-monitoring procedures and testing requirements, including interpretation of results
- asbestos removal methodologies and work practices for both friable and non-friable asbestos
- general WHS procedures for construction work
- health hazards associated with friable ACM and circumstances that may change the nature of ACM from non-friable to friable, such as:
  - weathering
  - wear and tear
  - application of tools and equipment
  - accidental damage
- safe work methods for the removal of friable and non-friable asbestos
- hazards associated with using enclosures and removing friable and non-friable asbestos
- general construction terminology
- handling requirements of differing types of asbestos materials
- work site and work area procedures
- job safety analysis (JSA) and safe work method statements (SWMS) if required for construction
- safety data sheets (SDS)
- materials storage and hazardous waste management
- plans, drawings and specifications, asbestos registers and register amendments

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- quality requirements relating to asbestos assessment associated with removal
- risk assessment processes and contingency planning relating to asbestos assessment associated with removal
- scientific techniques for measuring, testing and evaluating air-monitoring results and reports, including:
  - principles of fibre counting
  - analysis of bulk samples
- techniques associated with containing and removing asbestos, including:
  - use of large and small-scale enclosures for different sites
  - use of negative pressure exhaust units
  - encapsulation methods
  - use of decontamination unit
- testing methodologies (in particular air monitoring) and protocols associated with the sampling process, handling, gathering and transport of ACM
- types, characteristics, uses and limitations of plant and equipment involved in enclosing and removing asbestos
- workplace and equipment safety requirements
- documentation required for clearance inspections following application of rigorous professional assessment and using specified wording defined in regulations

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, providing that simulated or project-based assessment techniques fully replicate workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person should demonstrate the ability to: • plan for the asbestos removal assessment process by ensuring access to required documentation and consultation with the client and workplace • interpret and apply the requirements of relevant legislation, regulations, codes of practice and standards to ensure the safe and correct assessment of the removal of ACM • demonstrate understanding of the scientific and technical principles that underpin the ACM removal assessment process • undertake preparations for collecting samples, including identification of sampling areas, the sampling process, sampling schedule, air-monitoring plan and strategy • collect samples from site and handle in a manner that ensures the integrity of the sample, including use of protocols for the chain of custody • prepare samples for analysis and transporting to a NATA or other accredited laboratory • interpret and analyse laboratory results • conduct site inspections, prepare advice to clients and provide clearance certification.
Context of and specific resources for assessment	This unit is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work

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	practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • research resources, including industry-related systems information • safety data sheets. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge • all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed. Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Type of asbestos containing materials (both friable and non-friable) may include: **Note:** • Non-friable asbestos is also known as bonded asbestos • ACM notionally listed as non-friable may become friable due to weathering or damage	• acoustic plaster soundproofing • adhesives and glues • asbestos cement • asbestos cement moulded guttering • asbestos cement sheets • asbestos tiles • bitumastic felts and materials • compressed asbestos cement panels • floor vinyl covering • gaskets • mortar • pipe lagging • woven textiles, ropes, tapes and braids • decorative coatings • resinous backing board • sealant mastic • sprayed on fireproofing, soundproofing and thermal insulation • tape • thermal insulation.
Legislation, regulations, code of practice and standards may include:	• asbestos WHS legislation, regulations and codes of practice, including those relating to asbestos fibre hazards • exposure standards for atmospheric contaminants in occupational environments • guidance material, such as guidance notes, guides, fact sheets, model regulations and technical reports that provide practical guidance and direction for hazard control • national Safe Work Australia codes • Australian standards • biological exposure indices.
Independent assessment is a:	• requirement that is achieved by the licensed asbestos removalist and asbestos assessor being contracted independently to the client or project manager in order to avoid conflicts of interest.

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Characteristic and health impacts of exposure to ACM include:	• range of diseases • how it is absorbed into the body • how it affects specific parts of the body, such as extent of damage to tissue • dose factors relating to concentration and time.
Accreditation framework must include:	• role of NATA and other accredited laboratories • accreditation processes • accreditation status of the assessor • requirements for sampling, testing and reporting for planning purposes • role relationships with and of the accredited assessor.

Compliant removal of asbestos by specialist removalists requires application of methodologies and processes, including:	• decontamination of:
	  • worker
	  • tools and equipment
	  • work area and work site
	• installation, use and disassembly of decontamination units
	• leak test enclosures
	• use, maintenance and construction of enclosures
	• use of:
	  • ARCP
	  • negative air extraction units
	  • PPE.

Work-site documentation may include:	• ARCP • building plans and specifications • building surveys.
Areas within the work site where measurements are to be collected are determined by factors, including:	• area or space available • location of removal work area or work site • movements of people and equipment • number of persons occupying area • physical features of equipment, such as emitting sources • tasks or activities being undertaken • type, quantity and location of asbestos in buildings and other sites • waste disposal pathways.

Personal protective equipment used in the monitoring process may include:	• protective clothing, such as:
	  • disposable coveralls with fitted hood and cuffs
	  • safety footwear (pull-on, not lace-up)
	  • disposable or protective gloves
	• respiratory protection class appropriate to the type of asbestos to be removed, which may be P1, P2 or P3
	• correct face fitting and use of respiratory protective equipment

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	• spare sets of PPE.

Air monitor locations may include:	• before asbestos removal activities inside asbestos removal areas
	• during asbestos removal activities:
	  • areas adjacent to and above and below asbestos removal site
	  • areas of high occupancy in the locality
	  • for removal of friable asbestos:
	  • area near (but not directly behind) negative air exhaust
	  • clean decontamination area
	  • area where underclothes are laundered
	• after asbestos removal and final cleaning inside the contained work area and work site.

Membrane filter method must conform to the:	• requirements of the current edition of the NOHSC Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres.
Strategy for sampling may include consideration of:	• accessibility and other practical considerations • bulk sampling analysis • fibre counting • frequency of exposure • location of nearby sensitive receptors • size of the workforce (i.e. individual worker or groups of workers) • work shift times.
Operability of equipment checks may include:	• battery serviceability • accuracy of calibrated devices • availability of appropriate attachments, leads, filters, etc. • pump fault lights • rejection criteria for flow rate fluctuations • pump back pressure tests • ensuring equipment is NATA or other accredited laboratory tested and certified, with certificate of currency as appropriate.
Equipment may include:	• air-monitoring stands • air monitors • battery charges • field sheets • filter cassettes • rotameters • screwdrivers • stopwatches • tubing.

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Calibration records are checked for equipment, including:	• pumps • rotameters • stopwatches.
Equipment:	• is used according to manufacturer specification and professional guidelines • entails processes that include checking the time and flow rate at the start and end of the sample collection period.
Information and data are collected and may include:	• conditions, such as activities and number of people present when measurements were made • date, time and duration of collection • locations where information and data were collected • readouts and measurements taken • required field blanks • sampling method, such as grab, longitudinal or continuous • specifications of equipment used.

Report containing required information and data may be required for or contain:	• exposure monitoring for the purpose of determining the PPE required
	• control and clearance air-monitoring report
	• where, when and why measurements were taken
	• sampling process:
	  • how measurements were taken
	  • specifications of equipment used
	  • locations where samples were taken
	  • conditions at time of sampling, including whether the sampling period represented normal operating conditions
	• table of results
	• interpretation and discussion of results
	• evaluation of results with reference to appropriate standards
	• completion of the clearance certificate
	• areas not accessed.

Audience for the report may include:	• client • NATA or other accredited laboratory staff • neighbours • occupiers of site • owners and managers • principal/managing contractors • removalists • supervisors • WHS committee or WHS representatives • WHS regulatory bodies.

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Unit Sector(s)

Construction

Custom Content Section

Not applicable.

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CPCCBC5018A Apply structural principles to the construction of medium rise buildings

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency specifies the outcomes required to apply structural principles to the building of medium rise buildings. The design and construction of medium rise buildings require the input of a range of skilled professionals, including architects and engineers. The building and construction professional plays a significant role within this project team and requires the ability to communicate effectively with building design professionals, and develop sound and safe practices in relation to structural procedures on site.

Application of the Unit

Application of the unit	This unit of competency supports builders, project managers and related construction industry professionals responsible for ensuring the structural integrity of materials as well as building and construction work so that site safety and quality control measures are maintained during residential and commercial projects.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCBC5001B Apply building codes and standards to the construction process for medium rise building projects

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Apply structural principles to planning the erection or demolition of a structure.	1.1. Main ***structural principles*** that apply to the erection of ***medium rise buildings*** are identified. 1.2. Performance characteristics of the structural elements, including ***materials*** identified in the building's plan, are identified, analysed and applied to the planning of the construction work. 1.3. Demolition of existing structures is undertaken in accordance with legislative and planning requirements and safe work practices.
2. Coordinate and manage site and job set-up assessment.	2.1. Processes are put in place to analyse the stability of soils and capacity of the site to support the construction loads. 2.2. Structural requirements for retaining walls are identified in conjunction with related industry professionals and applied to the planning process. 2.3. Structural function and requirements for ***temporary structural elements*** are analysed and applied to the planning process.
3. Coordinate and manage construction of footing systems.	3.1. Set-out of building is checked for compliance with documented building plans. 3.2. Structural performance of footings specified in the building plan is assessed for compliance with relevant codes and accepted industry construction principles. 3.3. Footings specified in the building plan are laid and checked for compliance with relevant codes and accepted industry construction principles. 3.4. Damp coursing and provision of termite barriers and other relevant techniques are planned, implemented and checked in accordance with codes, standards and industry practice.
4. Coordinate and manage structural elements of the construction process.	4.1. Technical construction principles and performance characteristics of the construction materials are identified and analysed in the planning of project. 4.2. Building plans and relevant standards and codes are identified and implemented to ensure appropriate allowances have been made for plumbing, electrical conduits and other services to be installed. 4.3. Processes for the construction of structural elements are identified and confirmed as compliant with relevant Australian standards and codes and

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ELEMENT	PERFORMANCE CRITERIA
	manufacturer specifications, with reference to specialists as required, and then implemented.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills

Required skills for this unit are:
• application of design concepts and principles
• communication skills to:
  • consult with industry professionals
  • enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  • read and interpret:
  • codes and standards
  • legislative and planning requirements
  • plans, specifications and drawings
  • other relevant documentation from a wide range of sources
  • use and interpret non-verbal communication
  • use language and concepts appropriate to cultural differences
• numeracy skills to apply measurements and calculations.

Required knowledge
Required knowledge for this unit is: • applications of structural principles in buildings • Building Code of Australia (BCA) and Australian standards • design principles and behaviour of structural members undergoing stress, strain, compression, bending or combined actions • interpretation and analysis of work drawings and specifications • nature of materials and the effect on performance • OHS and organisational quality procedures and processes.

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	This unit of competency could be assessed by the application of structural design principles to a medium rise building and construction project, including demolition of existing buildings and communication of the selection, positioning and sizing of all structural members that form fixed or temporary building structures for the project. This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • plan and implement the erection or demolition of buildings in compliance with relevant legislation • interpret and apply relevant documentation and codes • accurately apply design principles relating to performance • identify typical faults and problems and the action required to rectify them.
Context of and specific resources for assessment	This unit of competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • documentation, including design brief drawings, specifications, codes, design

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EVIDENCE GUIDE	
	concepts, construction schedules and other necessary supporting documents • research resources, including timber product information and samples • access to relevant legislation, regulations and codes of practice, including the BCA • relevant computer software package and suitable hardware. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

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EVIDENCE GUIDE	
	• all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed. Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Structural principles relate to factors that include:	• dead and live load calculations and characteristics • fire resistance of materials • impact of thermal effects • impact of time-dependent effects, including creep and shrinkage • impact of wind, snow, ground water, earthquake, liquid pressure, rainwater and earth pressure actions • structural resistance of forms of construction • structural resistance of materials.
Medium rise buildings as described within the BCA are:	• Classes 1 and 10 • Classes 2 and 3 to a maximum of 3 storeys • Classes 4 to 9 to a maximum of 3 storeys, not including Type A construction.

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RANGE STATEMENT	
Materials include:	• aluminium • composite steel and concrete • concrete, including reinforced, pre-stressed concrete and tilt-up panels • masonry • steel, including cold-formed steel.
Temporary structural elements include:	• bracing • close sheeting • formwork props • pressure-resistant formwork • scaffolding sole plates • shields • shoring collar sets • soldier sets • ties.

Unit Sector(s)

Unit sector	Construction

Co-requisite units

Co-requisite units	

Competency field

Competency field	Building services

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CPCCBC6001B Apply building codes and standards to the construction process for large building projects

Modification History

Minor changes throughout unit, mostly reflecting update to National Construction Code
Equivalent to CPCCBC6001A

Unit Descriptor

This unit of competency specifies the outcomes required to access, interpret and apply relevant building codes and standards applicable to the construction processes of large, high rise and complex buildings (open licensing classification with special reference to Type A buildings).
To successfully comply with relevant standards and codes in large constructions requires a thorough knowledge of the purpose of the National Construction Code (NCC) coupled with the ability to interpret specific standards in relation to the design and specifications of building projects.

Application of the Unit

This unit of competency supports builders, project managers and related construction industry professionals responsible for ensuring compliance with building codes and standards in the residential and commercial construction industry.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Access and interpret relevant code and standard requirements.	1.1	Relevant clauses from the NCC that apply to individual projects (classified as ***open***) are identified.
		1.2	Prescriptive requirements of relevant NCC clauses for ***standard construction*** are determined for the ***scope of work***.
		1.3	Requirements of relevant Australian standards referenced in the NCC are accessed and interpreted appropriately.
2	Classify buildings.	2.1	Nature of a building is determined according to use and arrangement.
		2.2	NCC criteria to determine the defined classification are applied.
		2.3	NCC requirements for multiple classifications are identified and interpreted.
3	Analyse and apply a range of solutions to a construction problem for compliance with the NCC.	3.1	Range of criteria that will ensure construction methods comply with intent of the NCC is determined.
		3.2	Alternative solutions to a construction problem that will comply with NCC ***performance requirements*** are discussed and proposed according to company policies and procedures and ***standard specifications***.
		3.3	Performance-based solutions are identified and documented according to NCC requirements.
		3.4	***Assessment methods*** used by authorities to determine whether **a *building solution*** complies with the NCC are

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			analysed and applied.
		3.5	NCC assessment methods are identified as appropriate to meet DTS provisions of NCC.
		3.6	Relevant documentation is identified and completed according to performance requirements of the NCC.
4	Apply fire protection requirements.	4.1	Fire resistance required for the construction of all classes and types of buildings is determined.
		4.2	NCC requirements with respect to passive and active fire protection to all classes and types of buildings are identified and applied.
		4.3	Check of existing buildings for compliance with passive and active fire protection requirements is carried out according to NCC requirements.
5	Implement strategy to manage compliance with NCC for large, complex and high rise buildings.	5.1	Processes are established and implemented to coordinate the work of professionals involved in the development and management of the building process.
		5.2	Effective design solutions for buildings of more than three storeys are sought to meet the needs of clients and ensure compliance with NCC.
		5.3	Quality assurance processes are designed and implemented to ensure effective and compliant management of the construction process.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- accurate application of building codes and standards
- application of design concepts and principles according to Australian standards
- application of design concepts and principles according to NCC
- analysis and interpretation skills relating to documentation from a wide range of sources, including NCC and Australian standards
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - discuss and propose alternative solutions
  - read and interpret specifications and drawings
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to complete documentation according to NCC requirements
- numeracy skills to apply mathematical information included in building codes and standards.

Required knowledge

Required knowledge for this unit is:

- application of NCC, namely:
  - low rise:
    - Class 1 and 10
    - Class 2 to 9 with a gross floor area not exceeding 2000 square metres, not including Type A or Type B construction
  - medium rise:
    - Class 1 and 10
    - Class 2 to 9 to a maximum of 3 storeys, not including Type A construction
  - open:
  - all classes of building and types of construction
- application of relevant Australian standards
- definitions and common technical terms or usage specified under general provisions of NCC

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- design principles and the behaviour of structures under stress, strain, compression, bending or combined actions
- nature of materials and effects of performance
- NCC performance hierarchy
- relevant legislative and OHS requirements, codes and practices
- work drawings and specifications.

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed by the application of design principles and solutions specified in the deemed-to-satisfy and performance-based concept of NCC criteria applied to a building project. This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with organisational quality procedures and processes • apply and interpret relevant documentation and codes • accurately apply NCC codes and standards relating to performance of and compliance with building project work • demonstrate understanding of the assessment methods available to determine whether a building solution complies with the NCC.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and

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environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- NCC, Class 2 to 9 buildings and Guide to NCC
- documentation, including design brief drawings, specifications, codes, design concepts, construction schedules and other necessary supporting documents
- research resources, including product information and data
- access to relevant legislation, regulations and codes of practice; like NCC, National Timber Framing Code, AS1684, AS4055 and other Australian standards required to meet the purpose of intended use
- relevant computer software package and suitable hardware.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a

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period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Open is classified as:

- classes of building and types of construction within the NCC with special reference to the construction of buildings of more than 3 storeys.

Standard construction includes:

- Australian standards relative to the scope and context of large building construction
- NCC.

Scope of work includes:

- characteristics
- compatibility
- dimensions

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- location
- patterns
- quantities
- sizes
- surfaces
- type of product or service.

Performance requirements include:

- cost
- detail relating to materials and quality of work
- milestones
- nominated subcontractors
- provision of site access and facilities
- quality assurance
- standard procedures
- standards of work
- work schedules.

Standard specifications include:

- detailed specifications addressing specific components, such as:
  - electrical
  - mechanical
  - structural
  - other requirements
- developed specifications
- preliminary and outline specifications.

Assessment methods include:

- comparison with DTS provisions
- evidence of suitability
- expert judgement
- verification method.

Building solutions include:

- alternative solutions that comply with the performance requirements of the NCC
- deemed-to-satisfy (DTS) provisions of the NCC.

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Unit Sector(s)

Functional area

Unit sector Construction

Custom Content Section

Not applicable.

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CPCCBC6002A Generate and direct the development of new projects

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to generate and direct the development of new projects in a building and construction organisation involved in either residential or commercial projects.

It supports the establishment of a soundly based commercial building or construction system necessary to produce accurate and successful project outcomes in accordance with organisational guidelines and objectives.

Application of the Unit

Application of the unit

This unit of competency supports builders, project managers and related construction industry professionals responsible for coordinating and managing building or construction projects.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify potential new projects.	1.1. Organisation's project history is examined to identify projects with successful or above average outcomes for characteristic evaluation. 1.2. Property and construction market is reviewed for available sites and buildings with development potential. 1.3. New trends in development and construction are monitored. 1.4. Available statistical data on possible areas of project development is analysed. 1.5. Network contacts are used to source businesses requiring new or upgraded facilities. 1.6. Most promising ***projects*** are short-listed and preliminary costings and returns are prepared.
2. Formulate development proposals and feasibility studies.	2.1. Short-listed projects are reviewed to facilitate selection of preferred options for detailed design work. 2.2. Project briefs are developed. 2.3. Environmental impact of projects is reviewed and any existing Environmental Impact Statement is assessed. 2.4. ***Feasibility studies*** are carried out on the project's commercial viability, and capacity to generate income through the various alternatives is ascertained. 2.5. Accurate costings are generated for each proposal. 2.6. Discussions are held with potential clients and investors and the benefits and risks of each project are explained. 2.7. Decision to proceed is taken once client and investor agreement is obtained.
3. Negotiate project approvals.	3.1. Project plans are submitted to relevant authorities to seek their reaction to project and any impediments to approval. 3.2. Project plan is revised to comply with authorities' directives. 3.3. Plans are resubmitted for formal planning approval as necessary.
4. Obtain project finance.	4.1. Finance institutions or investors are approached for financial support.

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ELEMENT	PERFORMANCE CRITERIA
	4.2. ***Suitable finance package*** is obtained for the project from institutions or investors. 4.3. Possible joint partners for the project are identified and approached, and interest is determined.
5. Manage the commissioning of a project.	5.1. Project consultants are appointed and retained. 5.2. Documentation for proposed project is prepared, checked against the brief and sent for formal building approval. 5.3. Detailed costing of approved documentation is completed. 5.4. Modifications are made to the project to bring it within or under budget if required. 5.5. Final decision is made to proceed with the project or defer to a future date.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - approach institutions and investors
  - conduct discussions with clients and investors
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - network with others
  - read and interpret documents from a variety of sources
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to:
    - document relevant information
    - prepare project briefs and plans
- conceptualisation of unique solutions to complex problems and situations
- facilitation skills to develop new projects
- interpretation of strategic and often ambiguous information to ensure logical and

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REQUIRED SKILLS AND KNOWLEDGE

practical decisions

- management skills, including the ability to delegate tasks within specific functional guidelines and direct the activities of personnel involved in the new project development process
- numeracy skills to interpret statistical data and apply calculations
- supervisory skills to monitor and oversee the performance of the project development systems and individuals involved in the process
- technological skills to facilitate use of the organisation's software and office equipment.

Required knowledge

Required knowledge for this unit is:

- appropriate sector of the building and construction industry and nature of the contracts upon which its activities are based
- factors to be considered in assessing the risk inherent in different types of building and construction projects
- financial and business administration principles commensurate with organisational needs
- industry's industrial relations climate and practices
- legislative, regulatory, and administrative obligations incumbent on the building and construction industry for OHS, environmental, employment and financial practices.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by the generation of new project developments and their effective direction. Effective performance includes the ability to ensure ongoing positive organisation and customer relationships that result in increased contractual success.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully

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EVIDENCE GUIDE

	replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • tender for and construct a variety of new projects • use effective project development procedures and frameworks supported and directed by strong and decisive leadership • select and deploy correct human and physical resources, which enable new projects to be developed • implement project management practices, which result in a high level of staff productivity • interact effectively with personnel both within and external to the organisation • demonstrate conceptual and strategic problem solving and systems development • communicate effectively both verbally and in writing with senior management, employees, clients, regulatory authorities and legal representatives.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • documentation that should normally be available in either a building or construction office • relevant codes, standards and regulations • office equipment, including calculators, photocopiers and telephone systems • computers with appropriate software to view 2-D CAD drawings, run costing programs and

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EVIDENCE GUIDE

print copies

- a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature
- copies of appropriate awards and workplace agreements
- a suitable work area appropriate to the construction process.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability

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EVIDENCE GUIDE

and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Projects include:

- commercial constructions
- earthworks
- high and low rise structures
- provision of electrical, plumbing and gas, waste disposal, environmental clean-up and other services
- residential construction.

Feasibility studies include:

- detailed analyses of markets and opportunities
- examination of possible extensions to existing projects
- gathering data from government or private sector publications
- personal investigation of opportunities
- socioeconomic and urban studies.

Suitable finance package

- bank or finance company loans

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RANGE STATEMENT

includes:	• customer or client funding • overdrafts • personal venture capital • speculative funds provided for investment.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC6003A Establish, maintain and review contract administration procedures and frameworks

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to manage the establishment, maintenance and review of contract administration procedures and frameworks of a building or civil work contract in an organisation involved in either residential or commercial projects.

It supports the establishment of a soundly based contract management system necessary to produce accurate and successful project outcomes in accordance with organisational guidelines.

Application of the Unit

Application of the unit

This unit of competency supports builders, project managers and related construction industry professionals responsible for coordinating and managing building or construction projects.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish and implement contract administration procedures and frameworks.	1.1. Contracts administration team is established comprising persons of wide experience and knowledge in the building and construction industry. 1.2. Overview of the organisation's current legal and administrative climate is developed and communicated to contracts administration team. 1.3. Strategic plan is developed for construction contract administration procedures and frameworks. 1.4. Information gathering mechanisms that draw strategic performance advice from all parts of the organisation are established. 1.5. ***Quality assurance measures*** are developed and implemented as part of the contracts administration process. 1.6. Reporting and feedback structures through which advice and action instructions can be conveyed to employees and subcontractors are developed and established. 1.7. Benchmarks for contract performance are established and a management framework is introduced for achieving, maintaining and exceeding those parameters. 1.8. Measures are developed and introduced through which contract defaulters can be managed back into contract compliance.
2. Maintain contract administration procedures and frameworks.	2.1. Policy and administrative guideline documentation is introduced that supports the contract administration process. 2.2. Evaluation and review methods are developed and implemented to ensure administration procedures and frameworks are effective. 2.3. Internal feedback systems and methods are initiated to ensure that difficulties with administration of contracts are resolved within organisational guidelines. 2.4. Measures which ensure the safety and security of contract administration documentation are introduced. 2.5. Overall corporate contract administration framework comprising employees, subcontractors, client and management is maintained.

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ELEMENT	PERFORMANCE CRITERIA
3. Review contract administration procedures.	3.1. Review, recording and evaluation system is developed, implemented and managed to ensure probity and effectiveness of the contract administration system. 3.2. Regular scheduled and unscheduled reviews of contract administration procedures are implemented and managed. 3.3. Formal evaluation of the contract and administration system is undertaken regularly in consultation with organisation's legal advisors. 3.4. Operating procedures are reviewed and clarified. 3.5. Contract documentation processes are reviewed and feedback is provided to those preparing contracts.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - communicate with team
  - consult with legal advisors
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - provide and seek feedback and information
  - read and interpret documents from a variety of sources
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to:
    - develop a strategic plan
    - document relevant information
- conceptualisation and envisaging of unique solutions to complex problems and situations
- facilitation skills to implement new and modified contract administration systems
- interpret mathematical information, including benchmarking

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REQUIRED SKILLS AND KNOWLEDGE

- interpret strategic and often ambiguous information to ensure logical and practical decisions
- management skills, including the ability to delegate tasks within specific functional guidelines and direct the activities of personnel involved in contracts administration process
- supervisory skills to monitor and oversee the performance of contract administration systems and individuals involved in the process
- technological skills to facilitate use of the organisation's software and office equipment.

Required knowledge

Required knowledge for this unit is:

- appropriate sector of the building and construction industry and nature of the contracts upon which its activities are based
- factors to be considered in assessing the risk inherent in different types of building and construction projects
- financial and business administration principles commensurate with organisational needs
- human resource practices and the industry's industrial relations climate and practices
- legislative, regulatory, and administrative obligations incumbent on the building and construction industry for OHS, environmental, employment and financial practices.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by demonstration of the effective establishment, maintenance and review of an organisation's contract administration procedures.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- implement effective contract administration procedures and frameworks supported and directed by strong and decisive leadership
- manage practices that result in a high level of staff productivity
- interact effectively with personnel both within and external to the organisation
- develop conceptual and strategic problem solving and systems
- communicate effectively both verbally and in writing with senior management, employees, clients, regulatory authorities and legal representatives.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- documentation that should normally be

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EVIDENCE GUIDE

	available in either a building or construction office • relevant codes, standards and regulations • office equipment, including calculators, photocopiers and telephone systems • computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies • a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature • copies of appropriate awards and workplace agreements • a suitable work area appropriate to the construction process. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured

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EVIDENCE GUIDE

learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Contract administration procedures and frameworks include:

- Australian standard contracts, including the AS2124 and AS4000 series
- authorised courses of action
- contracts include:
  - Construction Industry Contract (CIC) suite
  - dispute resolution procedures
  - document and contract distribution
  - individual organisational contracts

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RANGE STATEMENT

	• in-house rules about document preparation, completion and handling • internal and external communication models • Joint Contracts Committee (JCC) suite • Master Builders Association (MBA) and Housing Industry Association (HIA) contracts • organisation administration models • progress and contract performance reviews. • response times • Simple Building Works (SBW), including series 1 and series 2 (SBW2 Lump Sum) • staff roles and organisational procedures.
Quality assurance measures include:	• distributing information • establishing performance benchmarks for system • maintaining a quality dialogue with all parties to the construction process • managing within organisational policy • monitoring internal expenditures and funding allocations • obtaining adequate feedback from clients, subcontractors and suppliers • providing feedback and developing remediation procedures • responding to external legislation and regulation requirements.
Measures which ensure the safety and security of contract administration documentation include:	• confidentiality in contract handling • documentation security identification • limitations on contract access • limitations on contract circulation • limitations on document distribution • security in contract and document filing and storage.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC6005A Manage tender developments for major projects

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to manage tender developments for major projects. It covers the facilitation, implementation and management of the tender development system in a building and construction organisation involved in residential and/or commercial projects.

It supports the production of tenders that are based on sound economic, business, and human and physical resource data in accordance with the necessary organisational guidelines.

Application of the Unit

Application of the unit

This unit of competency supports the needs of builders and senior managers in building, construction and services, typically working in larger organisations and managing more complex projects and processes, responsible for managing tender developments for major residential and commercial projects.

It is essential that competence is demonstrated in relevant aspects of management of the ongoing tender development process, extensive background data provision, risk analysis and comprehensive evaluation of the tender prior to submission by the organisation. Knowledge of financial and business administration principles, human resource practices, industrial relations and legislative and regulatory requirements is essential.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Evaluate contract risk.	1.1. Invitation to tender is reviewed and analysed. 1.2. Contract documents pertinent to the project are obtained and examined in detail. 1.3. ***Conditions of contract*** are examined and confirmed in accordance with legislative and organisational requirements. 1.4. Organisation's current work load is verified to determine capacity to meet contract timelines. 1.5. ***Risk analysis*** is conducted and degree of risk in the project is investigated and established. 1.6. Management team is consulted in relation to likely construction approach and resources. 1.7. Client is advised of the intention or otherwise to submit a tender response.
2. Manage the tender process.	2.1. Staff members are allocated to tender preparation process. 2.2. Contact made by staff with subcontractors and suppliers to obtain quotations for services or physical resources is supervised. 2.3. Development of pre-tender construction or project schedule is managed and supervised.
3. Manage the development of human and physical resource costs.	3.1. Determining current equipment and materials charge-out rates is monitored. 3.2. Establishment of labour rates for elements of work is monitored and managed. 3.3. Project elements are analysed to ensure they conform to organisational contracting processes. 3.4. Rates to be applied to elements of the work are arbitrated on, to ensure these are compared to relevant existing records of costs. 3.5. Staff members are supervised to ensure appropriate rates are applied to the bill of quantities. 3.6. Extensions of ***human and physical resource costs*** are reviewed and monitored to ensure their accurate translation into the estimate summary. 3.7. Staff are monitored as they calculate and extend values for preliminaries and overheads. 3.8. Staff are monitored to ensure they are calculating and including all supplementary costs.
4. Prepare complete	4.1. Conditions of contract are reviewed and assessed to

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ELEMENT	PERFORMANCE CRITERIA
tender documentation and operating margins.	ensure there are no variations to the tender. 4.2. Subcontractor quotes are reviewed and assessed to ensure there are no variations to the tender. 4.3. Availability of plant and equipment is checked and confirmed. 4.4. Delivery schedules are confirmed and material suppliers are followed up.
5. Evaluate tender documentation prior to submission.	5.1. Staff preparation of the schedules, which detail the sequence of work, is supervised and managed. 5.2. Progress of the tender development is monitored for timeliness and accuracy. 5.3. Documentation is reviewed to ensure that tender is finalised in standard industry format for the client. 5.4. Final ***tender documentation*** is appraised for completeness and allocation of critical rates and allowances prior to its submission.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - consult management team
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - liaise with client
  - read and interpret:
    - contract documents
    - invitation to tender
    - legislation
    - subcontractor quotes
    - tender documentation
    - other relevant documentation
  - use and interpret non-verbal communication

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REQUIRED SKILLS AND KNOWLEDGE

- use language and concepts appropriate to cultural differences
- written skills to maintain records
- conceptualising and envisaging unique solutions to complex problems and situations
- delegating tasks within specific functional guidelines
- directing the activities of personnel involved in the tender development process
- facilitating the implementation of new and more appropriate information systems
- interpreting strategic and often ambiguous information and reaching logical and practical decisions
- monitoring and overseeing the performance of systems and individuals involved in the process
- numeracy skills to apply calculations
- technological skills to facilitate use of the organisation's software and office equipment.

Required knowledge

Required knowledge for this unit is:

- appropriate sector of the building and construction industry and nature of the contracts upon which its activities are based
- factors to be considered in assessing the risk inherent in different types of building and construction projects
- financial and business administration principles commensurate with organisation's needs
- human resource practices and the industry's industrial relations climate and practices
- relevant state or territory building and construction codes, standards and regulations
- socioeconomic and political factors which determine the climate in that sector of the building and construction industry.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by effective management of tender developments for major projects.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- develop tenders that comprehensively address project requirements
- implement management practices that result in a high level of strategic input and accuracy
- manage data acquisition from within and external to the organisation
- demonstrate conceptual and strategic problem solving and organisation of resources
- communicate effectively both verbally and in writing with owners, senior management and employees
- comply with legislative and regulatory requirements, standards and codes of practice.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- documentation that should normally be available in a building or construction office to

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EVIDENCE GUIDE

	comply with legislation and organisation policies • relevant codes, standards and regulations • office equipment, including calculators, photocopiers and telephone systems • computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies • a technical reference library with current publications on measurement, design, building construction to support underpinning knowledge and manufacturers' product literature • copies of appropriate awards and workplace agreements • a suitable work area appropriate to the tendering process • client file for information and review. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the

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EVIDENCE GUIDE

workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Conditions of contract include:

- contract clauses and intentions
- dispute resolution
- general conditions of contract
- legislative and regulatory requirements
- liabilities
- parties' obligations under contracts.

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RANGE STATEMENT

Risk analysis includes:	• analysis and revision of data • critical incident analysis and reporting • proposing solutions and recovery scenarios • risk management practices • scheduling and planning for contingencies.

Human and physical resource costs include:	• developing and introducing costing methods and systems
	• development of subcontracting and organisational contracting arrangements
	• establishing methods of calculating standard times for work activities
	• establishing personnel review and evaluation processes
	• evaluation of work practices and industrial relations arrangements
	• human resource processes, including:
	  • legislative and regulatory requirements
	  • maintaining accuracy and legitimacy of the tender process
	  • management of material costs and information concerning availability
	  • management of work practices and staff discipline
	  • performance appraisal
	  • selection and training of personnel to deal with the tender function.

Tender documentation includes:	• drawings and specifications • form of tender • head and sub contracts • pre-contract documentation • tendering codes of practice and standards.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC6006A Manage the procurement and acquisition of resources for building or construction projects

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to establish and strategically manage the resources procurement process. It includes the evaluation and moderation of those practices, and results in the resources of the organisation being channelled into generating appropriate information and activities to support and maintain the timely provision of supplies, equipment and people to residential and commercial projects.

Application of the Unit

Application of the unit

This unit of competency supports builders, project managers and related construction industry professionals responsible for coordinating and managing building or construction projects.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Direct the resource acquisition process.	1.1. Organisational strategic resource procurement and acquisition processes are managed in accordance with company policies and procedures. 1.2. Staff members responsible for procurement and acquisition of resources are informed of organisational resource requirements. 1.3. ***Financial and business principles*** are applied to the resource acquisition process.
2. Maintain financial and administrative control over the resource acquisition process.	2.1. Administration system of ***financial and administrative control*** through which resources are procured and acquired is monitored for its effectiveness. 2.2. Financial and corporate responsibility is exercised over the procurement and acquisition system and its maintenance. 2.3. Procurement reports are evaluated in preparation for management team meetings. 2.4. Schedules of staff duties are prepared for setting up of each site. 2.5. Staff are allocated to specific tasks within the procurement process. 2.6. Regular meetings are facilitated and conducted between team members and the client to report on progress.
3. Manage industrial relations matters related to the procurement and acquisition of resources.	3.1. ***Industrial relations*** practices within the building and construction industry are monitored to ensure compliance. 3.2. Industrial relations disputes emanating from either the supply or delivery of physical resources are addressed and resolved according to company policy. 3.3. Industrial relationships between the organisation's personnel and subcontractors are maintained.
4. Initiate and supervise the evaluation and moderation of the resource procurement and acquisition process.	4.1. Procurement process evaluation and moderation systems are developed and managed in accordance with company policy. 4.2. Evaluations of the resource procurement system and related processes are initiated and monitored to identify possible system improvements. 4.3. Strategic information relating to the procurement or acquisition of resources is gathered and evaluated.

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ELEMENT	PERFORMANCE CRITERIA
	4.4. Reports on trends in costs and quality of the resources provided to organisational work sites by suppliers are evaluated. 4.5. Orders for resources using approved company documentation and procedures are scrutinised and evaluated to ensure compliance.
5. Administer the provision and withdrawal of resources from site.	5.1. System for the effective supply and withdrawal of resources from sites is established and maintained. 5.2. Strategic information on the usage and movement of resources on site is managed. 5.3. ***Communications principles and policies*** between on-site personnel and providers of physical resources are established and maintained. 5.4. Feedback from sites is obtained and monitored at commencement, during and on completion of the project.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - address and resolve disputes
  - allocate tasks
  - conduct and facilitate meetings
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - provide information to staff
  - read and interpret:
    - orders for resources
    - reports
    - strategic information
    - other relevant documentation
  - use and interpret non-verbal communication

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REQUIRED SKILLS AND KNOWLEDGE

- use language and concepts appropriate to cultural differences
- written skills to:
  - prepare schedule of staff duties
  - record communications and action taken
- conceptualisation skills to envisage unique solutions to complex problems and situations
- facilitation skills to implement new and modified systems
- interpreting strategic and often ambiguous information and reaching logical and practical decisions
- management skills, including the ability to delegate tasks within specific functional guidelines and direct the activities of personnel involved in the procurement and acquisition of resources
- supervisory skills to monitor and oversee the performance of systems and individuals involved in the process
- technological skills to enable effective administration and monitoring of procurement system and processes.

Required knowledge

Required knowledge for this unit is:

- building and construction industry contracts
- factors that contribute to the provision of physical and human resources in a construction environment
- financial and business principles as they apply to the building and construction industry
- human resource and industrial relations practices within the building and construction industry
- organisational strategic and operational activities and the mechanisms through which they are addressed
- relevant building and construction codes, standards and regulations.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by establishing and conducting a review and evaluation of processes that ensure the ongoing effectiveness of a procurement system.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- strategically focus on the procurement process and system to handle activities on more than one site
- overcome obstacles to procurement of human and physical resources
- effectively deal with delays
- evaluate the system and recommend and implement remedial or improvement-based changes
- develop resource supply schedules and prioritise events, allowing for possible contingencies
- communicate information, including OHS regulations applicable to workplace.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

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EVIDENCE GUIDE

- documentation that should normally be available in either a building or construction office
- relevant codes, standards and regulations
- office equipment, including calculators, photocopiers and telephone systems
- computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies
- current publications on measurement, design, building construction and manufacturers' product literature
- copies of appropriate awards and workplace agreements
- a suitable work area appropriate to the construction process.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured

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EVIDENCE GUIDE

learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Financial and business principles include:

- accountability and integrity
- accurate and timely development and maintenance of financial records
- compliance with all legal and financial obligations
- probity and honest dealing
- transparency of financial processes.

Financial and administrative

- agreements with subcontractors and material suppliers

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RANGE STATEMENT

control over the procurement process includes:	• authorising payment for services provided • generation of procurement documentation • managing the raising of purchase orders.
Industrial relations within the procurement process include:	• associations and industrial relationships between the organisation and subcontractors • associations and industrial relationships between the organisation and material suppliers • dispute resolution between on-site personnel involved in the procurement process • dispute resolution involving disagreements between the organisation and subcontractors • engaging on-site labour • negotiating payments under awards, agreements and workplace agreements • proactive communication and incident avoidance.
Communications principles and policies include:	• form of responses to meet circumstantial requirements • quality and veracity of responses • recording of communication details and action taken • responsibilities for follow-up action • status or level of respondents • timeliness of responses.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCBC6007A Develop, plan and implement appropriate building or construction environmental management practices and processes

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to develop, plan and implement systems designed to manage environmental practices and processes in either residential or commercial projects.

It supports the establishment of a soundly based environmental management system necessary to produce project outcomes that meet legislative requirements of statutory authorities.

Application of the Unit

Application of the unit

This unit of competency supports builders, project managers and related construction industry professionals responsible for coordinating and managing building or construction projects.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Quantify and qualify the factors to be included in the organisational environmental management system.	1.1. ***Strategic factors*** impacting on organisational compliance with environmental obligations are identified and quantified. 1.2. Range and scope of activities being undertaken by the organisation within environmental guidelines and obligations are quantified. 1.3. Government, including local government, publications and information are monitored to identify and maintain knowledge of environmental issues. 1.4. ***Strategic and operational factors*** impinging on organisational environmental management process are qualified and measured.
2. Establish and implement the organisational environmental management plan and system.	2.1. Design and development of the organisational environmental planning system is directed and managed. 2.2. Criteria for implementing and maintaining systems concerned with managing the environmental requirements of construction sites are developed. 2.3. Methods are developed to gather and monitor environmental management information essential to the construction process. 2.4. Environmental management process is regularly evaluated to ensure accuracy and compliance with policy.
3. Establish and implement an environment management control system.	3.1. ***Environment control system quality*** is managed in accordance with sound management principles and practices. 3.2. Methods for determining effectiveness of the major elements of the environmental management system are introduced. 3.3. Staff are trained and managed to ensure that quality assurance practices are applied to the environmental management process on a daily basis. 3.4. Routine monitoring of environmental benchmarks is conducted.
4. Facilitate the introduction of systems to manage organisational environmental	4.1. Organisational policies and procedures for environmental management are developed and introduced. 4.2. Policies and routines are documented for future reference.

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ELEMENT	PERFORMANCE CRITERIA
policies and practices.	4.3. Policy guidelines and obligations are circulated within the organisation and sign-off by staff, employees and contractors is obtained. 4.4. Compliance of all staff with environmental policy is monitored.
5. Implement an environmental conformance feedback system.	5.1. Processes to monitor and report on environmental issues and procedures are developed and introduced. 5.2. ***Feedback systems*** are developed, circulated and maintained to ensure all stakeholders can support the environmental management process.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to facilitate the implementation of new and modified environmental management and review systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - obtain agreement on guidelines and obligations
  - seek feedback
  - train staff
  - read and interpret:
    - information
    - publications
    - other relevant documentation
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to develop and document policies and procedures
- interpretation of strategic and often ambiguous information to ensure logical and practical decisions
- conceptualisation of unique solutions to complex problems and situations
- management skills, including the ability to delegate tasks within specific functional

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REQUIRED SKILLS AND KNOWLEDGE

guidelines and direct the activities of personnel involved in the environmental management and review process

- supervisory skills to monitor and oversee the performance of the management and review systems and individuals involved in the process
- technological skills to facilitate use of the organisation's software and office equipment.

Required knowledge

Required knowledge for this unit is:

- environmental issues that impact on the organisation and its practices
- financial and business administration principles commensurate with organisational needs
- factors to be considered in assessing the environmental risk inherent in different types of building and site utilisation projects
- key factors that influence decisions on environmental issues and decision making
- legislative, regulatory and administrative obligations incumbent on the building and construction industry for environmental practices.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed by the development, implementation and maintenance of an environmental management system within an organisation. This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • develop an effective environmental conformance strategy • develop identifiable roles and responsibilities for organisation personnel involved in that strategy • implement management practices that result in a high level of conformance by the organisation to environmental obligations • strategically plan to meet environmental obligations and effectively interact with personnel both within and external to the organisation • develop conceptual and strategic problem solving and systems • communicate effectively both verbally and in writing with senior management, employees, clients, regulatory authorities and legal representatives.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge

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EVIDENCE GUIDE

will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- documentation that should normally be available in either a building or construction office
- relevant codes, standards and regulations
- office equipment, including calculators, photocopiers and telephone systems
- computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies
- a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature
- copies of appropriate environmental legislation and regulations
- strategic building and construction market information
- a technical reference library with current publications on design, building construction and manufactures product literature
- suitable work area appropriate to the construction process.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability

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EVIDENCE GUIDE

skills with workplace tasks and job roles

- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and

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RANGE STATEMENT

regional contexts) may also be included.

Strategic factors impinging on organisational environmental obligations include:	• federal, state or territory environmental legislation • local authority by-laws, Acts or regulations concerning environmental issues • location and nature of the construction activity • scope of operations and activities of the organisation • types of licences and permits held or needing to be held by the organisation.
Strategic and operational factors impinging on the organisational environmental management process include:	• management commitment to the environmental management process • organisation policy and operating guidelines • public liabilities and exposure to risk • risk management strategies and policies • structure of the management team and apportionment of responsibilities.
Environment control system quality principles and practices include:	• ensuring availability of appropriately qualified personnel to deal with environmental issues • maintenance of agreed expenditure for environmental management compliance • obtaining timely and relevant expert advice as required by the project • organisational compliance with appropriate legislation and regulations • periodic review of environmental management practices and processes • preventative maintenance of environmental management practices and processes.
Feedback systems include:	• emergency or process breakdown advisory channels • formal meetings between staff, employees and contractors on a regular basis • programmed appraisals of compliance with environmental policy involving organisation staff, employees and contractors • programmed reporting and environmental conformance statements and timetables • verbal, electronic and hard copy information communications systems.

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Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC6008A Develop and implement an appropriate estimating and tendering system

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to develop and implement an appropriate estimating and tendering system. It covers the facilitation, implementation and maintenance of an estimating and tendering system in a building and construction organisation involved in residential and/or commercial projects. It supports the establishment of the human resources and facilities necessary to produce accurate and successful tenders in accordance with contractual guidelines.

Application of the Unit

Application of the unit

This unit of competency supports the needs of builders and senior managers within building, construction and services firms, typically working in larger organisations and managing more complex projects and processes, responsible for developing and implementing estimating and tendering systems for residential or commercial projects.

Knowledge of financial and business administration principles, and factors that determine the risks inherent in the organisation's range of construction types, is required. Ability to identify and interpret strategic information which could affect the organisation's financial viability and direct personnel effectively is essential.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Quantify and qualify factors to be included in the organisational tendering system.	1.1. Strategic economic and social factors impacting on the organisation are quantified and qualified. 1.2. Range and scope of activities to be undertaken by the organisation and their impact are strategically quantified and qualified. 1.3. Strategic operational and financial structures within the organisation are reviewed and qualified regarding their information needs.
2. Establish and implement tendering system in the organisation.	2.1. Design and development of the organisational estimating and ***tendering system*** are facilitated and implemented in accordance with legislative and organisational requirements. 2.2. Strategic criteria for personnel and processes concerned with estimating and tendering are established and disseminated. 2.3. Endorsement of senior management for implementation of the system is obtained. 2.4. Staff with the necessary expertise and industry knowledge to excel at the tasks involved are appointed.
3. Establish and implement a tendering quality control system.	3.1. Appropriate financial structures which underpin the tendering process are identified and applied. 3.2. ***Review and feedback system*** using company project records and performance criteria is facilitated and implemented.
4. Develop and implement a client feedback system.	4.1. ***Communication system*** to enable effective contact with clients is established and implemented. 4.2. Client feedback system based on price, performance, progress and other strategic factors is planned and strategically implemented.
5. Establish a recording and evaluation system.	5.1. ***Tender recording system*** which meets organisational needs for ongoing evaluation of tender performance is designed and implemented. 5.2. Strategic balances and checks which enable the ongoing maintenance of quality of the estimating and tendering system are developed and implemented.

Required Skills and Knowledge

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- apply numeracy skills to workplace requirements
- communication skills to:
  - appoint staff
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - obtain senior management endorsement
  - read and interpret documents from a variety of sources
  - seek feedback
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to complete relevant documentation
- conceptualising and envisaging unique solutions to complex problems and situations
- delegating tasks within specific functional guidelines
- directing the activities of personnel involved in the estimating and tendering process
- facilitating the implementation of new and modified systems
- interpreting strategic and often ambiguous information and reaching logical and practical decisions
- monitoring and overseeing the performance of systems and individuals involved in the process
- technological skills to facilitate use of the organisation's software and office equipment.

Required knowledge

Required knowledge for this unit is:

- appropriate sector of the building and construction industry and the nature of the contracts upon which its activities are based
- factors to be considered in assessing the risk inherent in different types of building and construction projects
- financial and business administration principles commensurate with organisational needs
- human resource practices and the industry's industrial relations climate and practices
- relevant state or territory building and construction codes, standards and regulations

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REQUIRED SKILLS AND KNOWLEDGE

- socioeconomic and political factors which determine the climate in that sector of the building and construction industry.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by effective development and implementation of an estimating and tendering system for an organisation.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- implement an effective estimating and tendering system, supported and directed by strong and decisive leadership
- develop conceptual and strategic problem solving and systems
- implement management practices which result in high level staff productivity
- interact effectively with personnel within and external to the organisation
- communicate effectively both verbally and in writing with senior management, employees, clients and regulatory authorities
- comply with legislative and regulatory requirements and codes of practice.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

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EVIDENCE GUIDE

- suitable project work applicable to the building and construction process
- appropriate equipment, materials and documentation to comply with OHS legislation and other organisational policies
- related learning resources in support of the underpinning knowledge and skills acquisition required by this unit of competency.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured

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learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Tendering system factors include:

- legislative and regulatory requirements and codes of practice
- market rates, trends and technological improvements and variations
- materials and labour cost determination
- range of contracts employed by the organisation
- standard organisational documentation
- tendering methods, processes and timeframes
- timeframes and scheduling arrangements.

Strategic criteria for personnel and processes concerned with estimating and tendering include:

- analysis and revision of data
- critical incident analysis and reporting
- risk management
- scheduling and planning for contingencies.

Financial structures which underpin the tendering process

- accounting methods and systems
- calculation and apportioning of overheads and margins

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RANGE STATEMENT

include:	• subcontracting and organisational contracting rates.
Review and feedback system includes:	• critical path development and analysis • feedback loops • internal and external client review and feedback systems • personnel and system review and evaluation processes • programmed and critical incident evaluation meetings.
Communication system includes:	• phone, facsimile and email systems • handwritten and word-processed reports and briefing notes • internal and external memoranda • face to face communication.
Tender recording system includes:	• day logs and diaries • financial, labour and materials recording and inventory systems • manual and computer-based data systems.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC6009A Develop, plan and implement an appropriate building or construction planning process

Modification History

Not Applicable

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Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to develop, plan and implement an appropriate building or construction planning process. It applies to the strategic development and implementation of an organisation's project and organisational planning.

The unit applies to the management and review systems of an organisation involved in residential and/or commercial projects of significant size and complexity. It supports the establishment of a soundly based contract planning service necessary to produce accurate and successful project outcomes in accordance with organisational guidelines and legislation, codes and standards governing project completion.

Application of the Unit

Application of the unit

This unit of competency supports the needs of builders and senior managers within building, construction and services firms, typically working in larger organisations and managing more complex projects and processes, responsible for developing, planning and implementing an appropriate building or construction planning process.

The unit requires facilitating implementation of new and modified systems and monitoring and overseeing the performance of systems and personnel.

Knowledge of industry contracts, human resources and industrial relations practices; socioeconomic factors which influence the industry; and organisational strategic and operational activities is essential.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Quantify and qualify factors to be included in the organisational on-site planning system.	1.1. ***Strategic factors impacting on the planning process*** are identified and quantified in accordance with ***legislative***, ***code***, ***standard*** and organisational requirements. 1.2. Range and scope of activities to be undertaken by the organisation are quantified. 1.3. Strategic and operational planning structures within the organisation are reviewed and qualified regarding their information needs.
2. Establish and implement organisational on-site planning system.	2.1. Design and development of the organisational project planning system is facilitated. 2.2. ***Criteria for personnel and processes*** concerned with construction planning are established. 2.3. Endorsement of senior management is facilitated and obtained for implementation of the system. 2.4. Senior project staff are selected and appointed to meet organisational needs.
3. Establish and implement a planning quality control system.	3.1. Construction methodologies applicable to the type of construction project are identified and applied to the ***planning quality control process***. 3.2. Implementation of a review and feedback system using company project records and performance criteria is facilitated and directed.
4. Develop and implement an organisational feedback system.	4.1. Means of effectively communicating planning information within the strategic and operational sectors of the organisation is established and implemented. 4.2. Organisational feedback system based on performance, progress and project outcomes and other strategic factors is developed and strategically implemented.
5. Establish a recording and evaluation system.	5.1. Documentation and recording system that meets organisational needs for ongoing ***recording and evaluation*** of the planning process is instituted and managed. 5.2. Strategic balances and checks, which enable the ongoing maintenance of the quality of the planning system, are developed and applied.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- apply numeracy skills to workplace requirements
- communication skills to:
  - appoint staff
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - facilitate and obtain senior management endorsement
  - read and interpret:
    - codes and standards
    - legislation
    - other relevant documentation
  - seek feedback
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to complete relevant documentation
- conceptualising and envisaging unique solutions to complex problems and situations
- delegating tasks within specific functional guidelines
- directing the activities of personnel involved in the construction planning process
- facilitating the implementation of new and modified systems
- interpreting strategic and often ambiguous information and reaching logical and practical decisions
- monitoring and overseeing the performance of systems and individuals involved in the process
- technological skills to facilitate use of the organisation's software and office equipment.

Required knowledge

Required knowledge for this unit is:

- financial and business principles as they apply to the building and construction industry
- human resource and industrial relations practices within the building and construction industry
- organisational strategic and operational activities and mechanisms through which they are addressed

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REQUIRED SKILLS AND KNOWLEDGE

- relevant state or territory building and construction codes, standards and regulations
- socioeconomic and political factors which impact on the building and construction industry
- type, breadth and scope of building and construction industry contracts.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed by effective development, planning and implementation of an appropriate building or construction planning process. This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • develop a strategic focus on the mechanisms implemented to enable the construction planning process • interpret organisational information and reporting requirements, which results in the establishment of mechanisms that demonstrate those needs are being met • implement and maintain mechanisms and systems which enable demonstrable improvements to occur within the organisational construction planning process • delegate effectively and oversee tasks • communicate effectively both verbally and in writing with owners, senior management and employees.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements.

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EVIDENCE GUIDE

Resource implications for assessment include:

- documentation that should normally be available in a building or construction office to comply with legislation and the organisation policies
- relevant codes, standards and regulations
- office equipment, including calculators, photocopiers and telephone systems
- computers with appropriate software to view 2-D CAD drawings, run costing programs, record and print copies
- a technical reference library with current publications on measurement, design, building construction to support underpinning knowledge and manufacturers' product literature
- copies of appropriate awards and workplace agreements
- a suitable work area appropriate to the planning process.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over

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EVIDENCE GUIDE

a period of time reflecting the scope of the role and the practical requirements of the workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Strategic factors impacting on the planning process include:

- clients and client needs
- location of projects
- logistics and location of personnel
- market focus and structure of the organisation
- organisation information needs and timelines

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RANGE STATEMENT

	• relevant legislative requirements, codes and standards • strategic organisational objectives • type of work being undertaken.
Legislative, code and standard requirements include:	• application of the Building Code of Australia (BCA) related to the size and complexity of the project and the class of building being constructed • council and other relevant planning approval processes • OHS and other workplace standards • relevant state or territory licensing arrangements.
Criteria for personnel and processes include:	• appropriate experience and qualifications of participants • correct and timely selection of key project supervisors and administrators • effective lines and methods of communication • suitability and timing of communication • suitability of documentation and reporting methods • suitability of work habits and timeliness of personnel.
Planning quality control process includes:	• documentation and graphical representation of data • establishment of performance benchmarks • evaluation and review methods and practices • feedback loops and information extraction • personnel and system information gathering and insert points • project review meetings and project progress reporting.
Recording and evaluation include:	• key point data availability and crisis flagging • maintenance and redevelopment of information recording systems • manual and electronic data recording processes • performance data entry and responsibility • programmed and crisis evaluation strategies.

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Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC6010A Plan, develop and implement building or construction energy conservation and management practices and processes

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency specifies the outcomes required to develop, plan and implement practices and processes concerning energy conservation and management practices of organisations involved in either residential or commercial projects. It supports the establishment of a management philosophy focused on reducing energy waste through greater awareness; and the implementation of practices which result in savings both within and external to the organisation.

Application of the Unit

Application of the unit	This unit of competency supports builders, project managers and related construction industry professionals responsible for coordinating and managing building or construction projects.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop energy conservation and management philosophies and strategies.	1.1. Factors to be included in the organisational ***energy conservation and management system*** are quantified and qualified. 1.2. ***Strategic factors*** that impact on the organisational ability to improve energy conservation and management practices and processes are evaluated. 1.3. Range and scope of activities being undertaken by the organisation in regard to energy conservation and management are quantified. 1.4. Previous policy and ***operational factors*** contributing to energy conservation and management are evaluated. 1.5. Organisational energy conservation and management policy and strategy are developed, with assessment of savings and benefits to be derived.
2. Scope the introduction and management of energy conservation and management principles and processes.	2.1. Board and senior management are consulted concerning the introduction and implementation of the energy conservation and management policy and strategy. 2.2. Organisational policy and management guidelines are developed covering energy conservation and management within and external to the organisation. 2.3. Strategic plan for the introduction of the policy and strategy is developed and documented. 2.4. Staff are briefed on criteria for implementing and maintaining systems concerned with energy conservation and management. 2.5. Methods are developed to gather and monitor energy conservation and management information essential to the management process. 2.6. Methods are developed to translate the policy into practice in the organisation and on site.
3. Implement the energy conservation and management system.	3.1. Energy conservation and management instructions are built into organisational operating procedures. 3.2. Staff training program is introduced to ensure that energy conservation and management practices are applied to organisational activities on a daily basis. 3.3. Methods for determining effectiveness of the energy conservation and management system are introduced. 3.4. Routine monitoring of energy benchmarks is

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ELEMENT	PERFORMANCE CRITERIA
	established and maintained.
4. Manage the organisational energy conservation processes.	4.1. Energy conservation and management issues are added to the process agenda at all levels of the organisation. 4.2. Contractors and employees are advised of and monitored within the framework. 4.3. Policy guidelines and obligations are circulated within the organisation and sign-off by staff, employees and contractors is obtained. 4.4. Staff compliance with energy conservation and management policy is monitored.
5. Implement an energy management feedback system.	5.1. Processes to monitor and report on energy conservation and management achievements are developed and introduced. 5.2. ***Feedback systems*** are developed, circulated and maintained to ensure all stakeholders can support the energy conservation and management process.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to facilitate the implementation of new and modified energy conservation and management systems
- apply numeracy skills to workplace requirements
- communication skills to:
  - consult board members and senior management
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - obtain agreement on guidelines and obligations
  - provide information to staff and contractors
  - read and interpret documents from a variety of sources
  - seek feedback
  - use and interpret non-verbal communication

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REQUIRED SKILLS AND KNOWLEDGE

- use language and concepts appropriate to cultural differences
- written skills to develop policies, strategies and plans
- conceptualisation of unique solutions to complex problems and situations
- interpretation of strategic and often ambiguous information to ensure logical and practical decisions
- management skills, including the ability to delegate tasks within specific functional guidelines and direct the activities of personnel involved in the energy conservation and management review process
- supervisory skills to monitor and oversee performance of the management and review systems and individuals involved in the process
- technological skills to facilitate use of the organisation's software and office equipment.

Required knowledge

Required knowledge for this unit is:

- energy conservation and management issues that impact on organisation and its practices
- factors to be considered in assessing the energy conservation and management requirements inherent in different types of building and site utilisation projects
- financial and business administration principles commensurate with organisational needs
- key factors influencing decisions on energy conservation and management issues and decision making
- legislative, regulatory and administrative obligations incumbent on the building and construction industry for energy conservation and management practices.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed by developing, implementing and maintaining the energy conservation and management system for an organisation. This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • contribute to an effective energy conservation and management strategy • establish identifiable roles and responsibilities for organisation personnel involved in that strategy • implement management practices which result in a high level of compliance with energy management guidelines and organisational policy • strategically plan to meet energy management obligations effectively • develop conceptual and strategic problem solving and systems • communicate effectively both verbally and in writing with senior management, employees, clients, regulatory authorities and legal representatives.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

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EVIDENCE GUIDE

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- documentation that should normally be available in either a building or construction office
- relevant codes, standards and regulations
- office equipment, including calculators, photocopiers and telephone systems
- computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies
- a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature
- copies of appropriate environmental legislation and regulations
- strategic building and construction market information
- a technical reference library with current publications on design, building construction and manufactures product literature
- suitable work area appropriate to the construction process.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles

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EVIDENCE GUIDE

- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

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RANGE STATEMENT

Energy conservation and management system quality principles and practices include:	• ensuring availability of appropriately qualified personnel to deal with energy issues • maintenance of agreed expenditures for energy management compliance • obtaining timely and relevant expert advice as required by the organisation or project • organisational compliance with appropriate legislation and regulations • periodic review of energy conservation and management practices and processes • preventative maintenance of energy conservation and management practices and processes.
Strategic factors impinging on the organisational energy conservation and management process obligations include:	• extent and types of equipment being operated • location and nature of the construction activity • organisational policy and management practices • scope of operations and activities of organisation • types, age and construction of buildings in which organisation operates.
Operational factors impinging on organisational energy conservation and management process include:	• management commitment to the energy conservation and management process • organisational policy and operating guidelines • public liabilities and exposure to risk • risk management strategies and policies • skills and experience of organisational personnel • structure of the management team and apportionment of responsibilities • timing of activities and project deadlines • types of materials and consumables being employed in the process.
Feedback systems include:	• emergency or process breakdown advisory channels • formal meetings between staff, employees and contractors on a regular basis • programmed appraisals of compliance with energy policy involving staff, employees and contractors • programmed reporting and energy management conformance statements and

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RANGE STATEMENT

	timetables • verbal, electronic and hard copy information communications systems.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC6011A Establish systems to develop and monitor building and construction costs

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to facilitate, implement and maintain a construction costing system in a building and construction organisation which is involved in either residential or commercial projects.

It supports the establishment of the human resources and facilities necessary to produce accurate and successful costing information, providing a basis for accurate estimating and tendering processes in accordance with organisational guidelines.

Application of the Unit

Application of the unit

This unit of competency supports builders, project managers and related construction industry professionals responsible for coordinating and managing residential and commercial building or construction projects.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Quantify and qualify factors to be included in the organisation costing system.	1.1. Strategic factors impacting on the construction costing process are identified and quantified. 1.2. Range and scope of activities being undertaken by the organisation under the contract are quantified. 1.3. Strategic and operational factors impinging on organisation costing processes are qualified, and measures are introduced to capture cost data.
2. Establish and implement organisational costing system.	2.1. Design and development of organisational project planning system are directed and managed. 2.2. Criteria for implementing and maintaining systems concerned with costing the construction process are developed and formulated into active practice. 2.3. Methods are developed to gather and monitor actual cost information essential to construction costing process. 2.4. Approval of costing process is obtained from senior management. 2.5. Costing process is regularly evaluated to ensure accuracy and compliance with policy.
3. Establish and implement a costing quality control system.	3.1. ***Quality control procedures*** are based on sound financial principles and practices. 3.2. Staff are trained to ensure that quality assurance practices are applied to the costing process on a daily basis. 3.3. System is developed that allows reconciliation of invoices for progress payments against work completed, or due for completion, prior to payments being approved.
4. Develop and implement a costing feedback system.	4.1. Method to effectively and quickly communicate financial information concerning construction costs within the organisation is established and implemented. 4.2. Review and feedback system is developed and maintained using company project records and performance criteria to identify cost over-runs or savings within the contract. 4.3. Subcontractor feedback system, based on performance, progress and other strategic factors, is planned and strategically implemented.
5. Establish recording and costing	5.1. Documentation and ***recording system*** are instituted to meet organisational needs for ongoing evaluation

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ELEMENT	PERFORMANCE CRITERIA
evaluation system.	of costing process. 5.2. Strategic balances and checks are applied that enable the ongoing maintenance of quality of the costing system.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret documents from a variety of sources
  - seek approval from senior management
  - seek feedback
  - train staff
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to complete relevant documentation
- conceptualisation of unique solutions to complex problems and situations
- facilitation skills to implement new and modified systems
- interpretation of strategic and often ambiguous information to ensure logical and practical decisions
- management skills, including the ability to delegate tasks within specific functional guidelines and direct activities of personnel involved in the estimating and tendering process
- numeracy skills to apply calculations to interpret costs
- supervisory skills to monitor and oversee the performance of systems and individuals involved in the process
- technological skills to facilitate use of the organisation's software and office equipment.

Required knowledge

Required knowledge for this unit is:

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REQUIRED SKILLS AND KNOWLEDGE

- appropriate sector of the building and construction industry and the nature of contracts upon which its activities are based
- factors to be considered in assessing the risk inherent in different types of building and construction projects
- financial and business administration principles commensurate with organisational needs
- human resource practices and industry's industrial relations climate and practices
- socioeconomic and political factors which determine the climate in that sector of the building and construction industry.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by the development and implementation of an organisational construction costing system. This should include relevant aspects of the monitoring process to ensure continued financial viability of the organisation.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- implement effective cost development and monitoring system
- apply management practices that result in a high level of staff productivity
- interact effectively with personnel both within and external to the organisation
- develop conceptual and strategic problem solving and systems
- communicate effectively both verbally and in writing with senior management, employees, clients, regulatory authorities and legal representatives.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

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- documentation that should normally be available in either a building or construction office
- relevant codes, standards and regulations
- office equipment, including calculators, photocopiers and telephone systems
- computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies
- current publications on measurement, design, building construction and manufacturers' product literature
- copies of appropriate awards and workplace agreements
- a suitable work area appropriate to the construction process.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured

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learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Strategic factors impacting on the construction costing process include:

- availability and accessibility of historical records
- availability of materials and suppliers costs
- awards, agreements and work practices
- construction methodologies and practices
- extent of information and anticipated degree of risk
- margins, allowances, rates and penalties
- organisational performance data

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RANGE STATEMENT

	• plant, equipment and provision of services.
Strategic and operational factors impinging on organisation costing processes include:	• ability to gather specific information concerning actual versus estimated costs • establishment of internal and external performance management systems • relationships with organisation's financial management and construction management systems.
Criteria for implementing and maintaining systems concerned with costing the construction process include:	• establishing and maintaining accurate estimating practices • gathering and classifying appropriate strategic and performance information • using the services of well trained and experienced personnel in the costing process.
Quality control procedures for maintaining costing involve obtaining adequate feedback from clients, subcontractors and suppliers and include:	• establishing performance benchmarks for system • maintaining a quality dialogue with parties to construction process • monitoring internal expenditure and funding allocations.
Evaluation of ***recording system*** and costing system includes:	• establishing and maintaining comprehensive records of bids • maintaining appropriate manual or electronic databases to assist performance comparisons • programmed and spontaneous reviews of success rates • providing secure and safe accommodation for costing information.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCBC6012A Manage and administer development of documentation for building or construction projects

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to manage and administer the development of documentation for either residential or commercial construction projects.

It supports the establishment of a soundly based contract management system necessary to produce accurate and successful project outcomes in accordance with organisational guidelines.

Application of the Unit

Application of the unit

This unit of competency supports builders, project managers and related construction industry professionals responsible for coordinating and managing building or construction projects.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Quantify and qualify factors to be included in organisational documentation processes.	1.1. Organisational administrative and operational structures and processes are identified and quantified. 1.2. Legal and financial obligations are identified that must be reflected in and conformed to in the development of documentation for building and construction ***projects***. 1.3. Range and scope of activities to be undertaken by the organisation and types of documentation and ***documentation processes*** required to support building or construction projects are quantified. 1.4. Strategic operational and project structures within and external to the organisation are reviewed and qualified as to their documentation requirements.
2. Implement and manage documentation system of construction organisation.	2.1. Design and development of documentation system of construction organisation are facilitated and managed. 2.2. Operational criteria for personnel and processes concerned with construction and project documentation are established. 2.3. Endorsement from senior management for implementation of system is obtained. 2.4. Staff members with necessary expertise and industry knowledge to excel at the work involved are appointed.
3. Establish and implement a construction documentation quality control system.	3.1. Appropriate corporate guidelines for a ***construction documentation quality control system*** which underpins the development and maintenance of construction or project documentation are identified or developed. 3.2. House rules are established and managed for the accurate and timely completion of construction and project documentation. 3.3. Documentation impinging on or requiring adherence to Acts, regulations or local authority requirements, that meets the necessary legal and/or financial obligations, is produced. 3.4. Review and feedback system using internal and external advice about the useability of company documentation is implemented and facilitated.
4. Establish a recording	4.1. ***Documentation recording system*** which fosters

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ELEMENT	PERFORMANCE CRITERIA
and evaluation system.	ongoing evaluation of construction or project performance is instituted. 4.2. Strategic checks and balances which enable ongoing maintenance of the quality of construction and project documentation are applied.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- apply numeracy skills to workplace requirements
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret documents from a variety of sources
  - seek endorsement from senior management
  - seek feedback
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to complete relevant documentation
- conceptualisation of unique solutions to complex problems and situations
- facilitation skills to implement new and modified documentation administration systems
- interpretation of strategic and often ambiguous information to ensure logical and practical decisions
- management skills, including the ability to delegate tasks within specific functional guidelines and direct the activities of personnel involved in the documentation administration process
- supervisory skills to monitor and oversee performance of the documentation administration systems and individuals involved in the process
- technological skills to facilitate use of the organisation's software and office equipment.

Required knowledge

Required knowledge for this unit is:

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REQUIRED SKILLS AND KNOWLEDGE

- appropriate sector of the building and construction industry and nature of the contracts upon which its activities are based
- factors to be considered in assessing the risk inherent in different types of building and construction projects
- financial and business administration principles commensurate with organisational needs
- human resource practices and the industry's industrial relations climate and practices
- legislative, regulatory and administrative obligations incumbent on the building and
- construction industry for OHS, environmental, employment and financial practices.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed through efficient and effective contract documentation management and administration, including the production of contracts, specifications and drawings which contribute to an organisation operating in an efficient and productive project environment.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- document administration procedures and frameworks supported and directed by strong and decisive leadership
- manage practices that result in a high level of staff productivity
- interact effectively with personnel both within and external to the organisation
- develop conceptual and strategic problem solving and systems
- communicate effectively both verbally and in writing with senior management, employees, clients, regulatory authorities and legal representatives.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory

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EVIDENCE GUIDE

	or Australian standards' requirements. Resource implications for assessment include: • documentation that should normally be available in either a building or construction office • relevant codes, standards and regulations • office equipment, including calculators, photocopiers and telephone systems • computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies • a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature • copies of appropriate awards and workplace agreements • strategic building and construction market information • a technical reference library with current publications on design, building construction and manufactures product literature • suitable work area appropriate to the construction process. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able

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to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

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RANGE STATEMENT

Projects include:	• civil construction projects • commercial construction • earthworks • high and low rise structures • provision of electrical, plumbing and gas, waste disposal, environmental clean-up and other services • residential construction.
Documentation processes include:	• development of documentation relating to the construction process, such as tenders, offers, contracts, drawings, specifications, schedules, materials lists and variations • recording, tracking and security of documentation, including secure storage • review and evaluation of amendments to documentation • transmission of documentation within and external to the organisation.
Construction documentation quality control system includes:	• confidentiality in document handling • development by experienced personnel • limitations on document circulation, access and distribution • security in document filing, storage and identification.
Documentation recording system and evaluation systems include:	• document reviews for appropriate structure, content, quality and relevance • electronic or manual transcription of information into document form • establishing and maintaining accurate document records • programmed and spontaneous reviews of active documents • providing secure and safe accommodation for documented information in electronic or hard copy form.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC6013A Evaluate materials for multi-storey buildings

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to evaluate and select appropriate materials for use in the construction of multi-storey buildings.

It considers a range of factors vital to the evaluation of materials, including the performance of concrete, the ability of materials to withstand fire and the environmental impact of certain materials in the building process.

Application of the Unit

Application of the unit

This unit of competency supports builders, project managers and related construction industry professionals responsible for ensuring the integrity of materials used in the construction of multi-storey buildings for commercial or residential purposes.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Assess the nature and performance of concrete for use in multi-storey buildings and other building types.	1.1. Plastic and hardened concrete properties are identified and recorded for ***building types***. 1.2. Sources of aggregate are listed and properties of each described. 1.3. Effects of impurities are described and recorded. 1.4. Manufacture and testing of concrete is conducted in accordance with relevant Australian standards.
2. Assess application of concrete used in multi-storey buildings.	2.1. Selection and distribution methods of concrete are determined following analysis of site access. 2.2. Correct distribution and placement methods of concrete are demonstrated and maintained. 2.3. Reasons and effects of compaction on both plastic and hardened concrete are identified. 2.4. Immersion, surface and form vibration are compared. 2.5. Accurate ***records*** relating to the application of concrete are maintained. 2.6. ***Types of curing methods*** and detrimental effects of poor or no curing are identified and recorded.
3. Evaluate methods undertaken to repair concrete.	3.1. Live and dormant cracks are identified. 3.2. Repair methods and causes of cracked concrete and concrete cancer are described and recorded in accordance with organisational procedures. 3.3. Faults in concrete are diagnosed and recorded in accordance with organisational procedures.
4. Evaluate effects of fire and heat on concrete used in multi-storey buildings.	4.1. ***Reinforced concrete*** is tested for effects of fire and heat. 4.2. Methods of fire protection for concrete elements are identified and applied.
5. Monitor environmental impacts of building materials used.	5.1. Concrete used in buildings complies with organisation's sustainability policies. 5.2. New technologies in concrete are monitored and applied in the construction of multi-storey buildings in accordance with organisational policies and guidelines. 5.3. ***Performance requirements*** of concrete in fire resistance construction are identified and applied in accordance with acceptable ***standard construction practices***.

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ELEMENT	PERFORMANCE CRITERIA
	5.4. Cost-effectiveness of using recycled materials is identified in accordance with acceptable standard construction practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- application of design concepts and principles
- application of measurements and calculations
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret:
    - documentation from a variety of sources
    - specifications and drawings
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to record information and maintain records
- numeracy skills to apply calculations
- technological skills to facilitate use of the organisation's software and office equipment.

Required knowledge

Required knowledge for this unit is:

- application of Building Code of Australia (BCA) and Australian standards
- applications of structural principles in buildings
- design principles and behaviour of structural members undergoing stress, strain, compression, bending or combined actions
- grading process and grade markings used to categorise timber and timber products
- OHS requirements, legislative codes and practices
- types and nature of materials and effect of their performance, including properties and uses of cement and types of hydraulic cement
- work drawings and specifications.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by applying correct processes for selecting and sizing materials for all structural components that form a complex building project.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- comply with OHS and organisational quality procedures and processes
- apply and interpret relevant documentation and codes
- apply design principles relating to performance
- identify typical faults and problems and the action required to rectify such faults.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- documentation, including design brief drawings, specifications, codes, design concepts, construction schedules and other necessary supporting documents
- research resources, including timber product information and samples
- access to relevant legislation, regulations and

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EVIDENCE GUIDE

	codes of practice, including BCA, National Timber Framing Code and AS1684, AS4055 • relevant computer software package and suitable hardware. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge • all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

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EVIDENCE GUIDE

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Building types include:

- bridge and pier construction
- buildings with concrete skeleton and slabs
- concrete column or wall 10 metres high
- slab on ground floor.

Records maintained include details regarding:

- causes of surface defects during concrete placement
- compaction of concrete
- finishing processes and surface treatments to slab concrete.

Types of curing methods include:

- accelerated curing
- continuously wetting concrete
- impermeable membrane curing.

Reinforced concrete includes:

- methods of pre-stressed concrete
- principles of reinforced concrete using steel, wire, fibres, etc.

Performance requirements include:

- characteristics, uses, maintenance and selection of materials and systems in terms of their:
  - alternative uses
  - cost effectiveness

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RANGE STATEMENT

	• hazard potential and environmental safety • installation requirements • needs for use of cranes and hoists • recycling capacity • rubbish removal demands • transport problems and restrictions • cost • detail relating to materials • evaluation and assessment for new materials • milestones • nominated subcontractors • provision of site access/facilities • quality assurance • quality of work • standard procedures • standards of work • work schedules.
Standard construction practices include:	• BCA, including AS1684.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC6014A Apply structural principles to the construction of large, high rise and complex buildings

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to apply structural principles to the building of large, high rise and complex buildings.

The design and construction of large buildings requires the input of a range of skilled professionals, including architects and engineers. The building and construction professional plays a significant role within this project team and requires the ability to communicate effectively with building design professionals and develop sound and safe practices in relation to structural procedures on site.

Application of the Unit

Application of the unit

This unit of competency supports builders, project managers and related construction industry professionals responsible for ensuring the structural integrity of materials and building and construction work so that site safety and quality control measures are maintained during residential and commercial projects.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Apply structural principles to the planning of the erection or demolition of a structure.	1.1. Main ***structural principles*** that apply to the erection of large, high rise and complex structures are identified. 1.2. Performance characteristics of the structural elements, including ***materials*** identified in the building plan, are identified, analysed and applied to the planning of the construction work. 1.3. Demolition of existing structures is undertaken in accordance with legislative and planning requirements and safe work practices.
2. Coordinate and manage the site assessment and job set-up.	2.1. Processes are put in place to analyse stability of soils and capacity of the site to support the construction loads. 2.2. Requirements for retaining walls are identified in conjunction with related industry professionals and applied to the planning process. 2.3. Structural function and requirements for ***temporary structural elements*** are analysed and applied to the planning process.
3. Coordinate and manage construction of footing systems.	3.1. Coordination of the set-out of the building is undertaken in accordance with documented building plans, following the full assessment of the site. 3.2. Structural performance of the footings specified in the building plan is assessed for compliance with relevant codes and accepted industry construction principles. 3.3. Footings, as specified in the building plan, are laid and checked for compliance with standards and accepted industry construction principles. 3.4. Damp coursing and the provision of termite barriers and other relevant techniques are planned, implemented and checked in accordance with codes, standards and industry practice.
4. Coordinate and manage structural elements of the construction process.	4.1. Technical construction principles and performance characteristics of construction materials are identified and analysed in the planning of project. 4.2. Processes for construction of all structural elements are identified, implemented and checked for compliance with manufacturer specifications and relevant Australian standards and codes. 4.3. Building plans and relevant standards and codes are

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ELEMENT	PERFORMANCE CRITERIA
	identified and implemented to ensure appropriate allowances have been made for plumbing, electrical conduits and other services to be installed.
5. Analyse and plan for structural integrity of buildings.	5.1. Relevant industry professionals are consulted to provide advice regarding the structural integrity of proposed building. 5.2. ***Structural requirements and loads*** of the building design are assessed. 5.3. Analysis is conducted of the effects of force and movements on structural elements. 5.4. Analysis of properties and behaviours of structural materials is conducted. 5.5. Analysis of section properties of structural elements is conducted using standard industry formulas and performance comparisons. 5.6. ***Performance characteristics of columns*** are evaluated using standard industry techniques. 5.7. Methods used for stress distribution in connections between structural elements are assessed. 5.8. Impact of ***various loads*** on the building structure is assessed. 5.9. Design impact of high performance structural elements is considered.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- application of design concepts and principles
- application of measurements and calculations
- communication skills to:
  - consult with industry professionals
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret:

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REQUIRED SKILLS AND KNOWLEDGE

- codes and standards
- legislative and planning requirements
- plans, specifications and drawings
- other relevant documentation
- use and interpret non-verbal communication
- use language and concepts appropriate to cultural differences
- interpret documentation from a wide range of sources
- numeracy skills to apply measurements and calculations.

Required knowledge

Required knowledge for this unit is:

- applications of structural principles in buildings
- Building Code of Australia (BCA) and Australian standards
- design principles and behaviour of structural members undergoing stress, strain, compression, bending or combined actions
- interpretation and analysis of work drawings and specifications
- nature of materials and effect of performance.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed by the application of structural design principles and communication of the selection, positioning and sizing of all structural members that form fixed or temporary building structures. This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • coordinate professional input to evaluate structural integrity of large and complex buildings • clearly analyse structural impact of design decisions • comply with OHS and organisational quality procedures and processes • apply and interpret relevant documentation and codes • apply design principles relating to performance • identify typical faults and problems and the action required to rectify such faults.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • documentation, including design brief

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EVIDENCE GUIDE

	drawings, specifications, codes, design concepts, construction schedules and other necessary supporting documents • research resources, including timber product information and samples • access to relevant legislation, regulations and codes of practice, including the BCA • relevant computer software package and suitable hardware. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability

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EVIDENCE GUIDE

	and applied knowledge • all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed. Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Structural principles relate to factors, including:	• dead and live load calculations and characteristics • impact of wind, snow, ground water, earthquake, liquid pressure, rainwater and earth pressure actions • impact of time-dependent effects, including creep and shrinkage • impact of thermal effects • structural resistance of materials • fire resistance of materials • structural resistance of forms of construction.
Materials include:	• masonry • concrete, including reinforced and pre-stressed concrete • steel, including cold-formed steel

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RANGE STATEMENT

	• composite steel and concrete • aluminium.
Temporary structural elements include:	• bracing • close sheeting • formwork props • pressure resistant formwork • scaffolding sole plates • shields • shoring collar sets • soldier sets • ties.
Structural requirements and loads relate to building:	• aesthetics • economy • equilibrium • functionality • stability • strength.
Properties and behaviours of structural materials include consideration of:	• effect of force on materials in tension, compression, stress, strain and elasticity • structural properties of common materials.
Analysis of ***performance characteristics of columns*** requires consideration of:	• bending behaviour and performance of loaded support beams • eccentric and axial load effect • load spanning elements for bending moments, shear forces, deflection and torsion • effect of connections • effect of slab behaviour in relation to spans and stress distribution • effect of slenderness ratio.
Various loads include:	• dead load • earthquake load • live load • wind load.
High performance structural elements include:	• castellated beams • connections • fire resistance • laminated beams • pre-stressed beams • slabs • trusses

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RANGE STATEMENT

- use of steel to reinforce concrete
- waffle slabs.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC6015A Apply building surveying procedures

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to conduct assessments of medium rise buildings for compliance with relevant building and land use standards.

It requires a detailed understanding of building codes and standards, design principles and building survey practices.

Application of the Unit

Application of the unit

This unit of competency supports builders, project managers and related construction industry professionals responsible for ensuring that plans and building specifications comply with relevant legislation and codes for residential and commercial projects.

The unit relates specifically to the assessment of medium rise buildings, being up to 25 metres in height, with a total floor area less than 2,000 square metres.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Review documents submitted for building and land use approval for compliance with relevant legislation and codes.	1.1. Plans, ***specifications*** and engineering drawings for medium rise buildings are accessed and interpreted. 1.2. Legislative requirements are interpreted and applied to various building projects. 1.3. Common faults with medium rise buildings are identified and recorded.
2. Inspect building work.	2.1. Progress of building work is monitored for compliance with ***standard construction practice*** in accordance with organisational quality assurance procedures. 2.2. Work that does not comply with standards and ***performance requirements*** is recorded and required remedial action is documented and communicated to appropriate personnel. 2.3. Ongoing communication with appropriate personnel is maintained to assist in monitoring progress of building work.
3. Prepare reports on various building types.	3.1. Advice with respect to work on medium rise buildings is prepared and reported. 3.2. Report on suitability of existing buildings prior to purchase inspections is documented. 3.3. Records of building safety inspections conducted on existing buildings are documented. 3.4. Reports on construction work prior to occupancy inspection are documented.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- application of building survey procedures to the assessment of building systems
- application of design concepts and principles
- application of measurements and calculations

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REQUIRED SKILLS AND KNOWLEDGE

- communication skills to:
  - communicate building work progress
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret:
    - legislation
    - plans, specifications and drawings
    - other relevant documentation
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to record relevant information and prepare reports
- interpretation skills, including the ability to interpret documentation from a wide range of sources
- numeracy skills to apply measurements and calculations and to interpret mathematical information
- technological skills to facilitate use of the organisation's software and office equipment.

Required knowledge

Required knowledge for this unit is:

- applications of structural principles in buildings
- building survey practices
- design principles and behaviour of structural members undergoing stress, strain, compression, bending or combined actions
- nature of materials and effect of performance
- relevant legislation, codes and practices, including Building Code of Australia (BCA), Australian standards and OHS requirements
- work drawings and specifications.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed by the application of building survey procedures to assessment of all structural components that form a building project. This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with OHS and organisational quality procedures and processes • apply and interpret relevant documentation and codes • apply design principles relating to performance of the building system • identify typical faults and problems and the action required to rectify such faults.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • documentation, including design brief drawings, specifications, codes, design concepts, construction schedules and other necessary supporting documents • research resources, including timber product information and samples

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EVIDENCE GUIDE

- access to relevant legislation, regulations and codes of practice, including the BCA
- relevant computer software package and suitable hardware.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

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EVIDENCE GUIDE

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Specifications include:

- detailed specifications addressing specific components, e.g. construction, mechanical, structural, services or other requirements
- developed specifications
- industry standard specifications
- preliminary or outline specifications.

Standard construction practice includes:

- Building Code of Australia (BCA), including relevant Australian standards.

Performance requirements include:

- cost
- detail relating to materials
- milestones
- nominated subcontractors
- provision of site access/facilities
- quality assurance
- quality of work
- standard procedures
- standards of work
- work schedules.

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Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC6016A Assess construction faults in large building projects

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to identify construction faults in large, high rise and complex buildings (open' licensing classification with special reference to Type A buildings). It includes the identification and evaluation of construction problems and determination of alternative methods in accordance with legislative requirements.

Builders and other related construction industry professionals for whom this unit is relevant, exercise personal judgement based on their knowledge, skills and experience. They must also coordinate the input and expertise of a range of other professionals in order to assess construction faults and determine appropriate responses.

Application of the Unit

Application of the unit

This unit of competency supports builders, project managers and related construction industry professionals responsible for assessing construction faults in large building projects, assembling the input of related professionals and determining appropriate responses.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and analyse construction faults in large building projects.	1.1. Information is collected relating to specific ***construction faults***. 1.2. Original specifications for the construction are analysed to identify potential causes of construction problem. 1.3. Construction problem is documented and communicated to relevant personnel in accordance with standard work practices. 1.4. Expert analysis and opinions are gathered as required from project team members and external professionals. 1.5. Problem solving techniques are used and typical faults and problems are identified and the action to rectify is deemed to be in accordance with the Building Code of Australia (BCA) ***open classification***.
2. Analyse construction techniques, methods and materials.	2.1. Building terminology is used accurately in the communication of issues. 2.2. Working drawings and specifications are evaluated to identify any existing or designed in construction problems. 2.3. Alternative methods and materials to meet construction aims and objectives are prepared to the specification nominated in relevant legislation in the BCA (open classification) and ***Australian standards***.
3. Evaluate alternative construction solutions.	3.1. Commonly occurring on-site problems with building materials and their causes are considered and evaluated. 3.2. Report identifying available alternative methods and materials available to meet the construction aims and objectives is prepared to specification. 3.3. Detailed sketches of available alternative methods and materials available to meet the construction aims and objectives are prepared to specification.
4. Resolve construction faults using alternative construction methods.	4.1. Suitable methods from the available alternative solutions are evaluated and recommended to resolve the problem, in accordance with project aims and objectives and using standard organisational processes. 4.2. Selected methods are integrated into the project in

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ELEMENT	PERFORMANCE CRITERIA
	order to resolve construction problems in accordance with project aims. 4.3. Evaluation of the available alternative forms of construction are carried out in accordance with project aims.
5. Communicate preferred solution to construction problem.	5.1. Technical resolution to the identified problem is documented in accordance with project and organisational requirements. 5.2. Appropriate documentation is lodged with and communicated to appropriate project and other personnel. 5.3. Strategies are determined and put in place to monitor the implementation of corrective procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- analysis and interpretation skills relating to documentation from a wide range of sources, including BCA and Australian standards
- applying access requirements for people with a disability and requirements of the Disability Discrimination Act (DDA) with regard to access to building projects
- applying design concepts and principles in accordance with Australian standards
- applying structural principles to the construction process
- applying building codes and standards
- communication skills to:
  - communicate construction problems to appropriate personnel
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret:
    - Australian standards
    - BCA
    - reports and legislation
    - working drawings and specifications

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REQUIRED SKILLS AND KNOWLEDGE

- seek expert analysis and opinions
- use and interpret non-verbal communication
- use language and concepts appropriate to cultural differences
- written skills to:
  - record construction problem
  - prepare report identifying alternative methods and materials
- apply numeracy skills to workplace requirements.

Required knowledge

Required knowledge for this unit is:

- design and construction principles of buildings
- nature of materials and effect on performance
- processes for the administration and preparation of documentation
- processes for the interpretation of reports, working drawings and specifications
- relevant federal, state or territory legislation and local government policy and procedures
- research methods
- terminology, definitions and hazard identification.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by identifying construction faults and their correction to achieve, certification of compliance on the final outcome or authorisation for commencement by a competent authority.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- comply with OHS regulations applicable to workplace operations
- apply organisational management policies and procedures, including quality assurance requirements where appropriate
- assess construction faults in buildings, determine a rectification strategy and consider alternative construction methods; and the associated reporting of data, findings, recommendations and strategies for at least one residential building project and one commercial building project or equivalent in compliance with relevant legislation
- provide reports to appropriate body or individual as determined by the project brief.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory

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or Australian standards' requirements.

Resource implications for assessment include:

- relevant Acts, Australian standards, regulations and codes of practice for building design
- plans, working drawings, specifications and material requirements for relevant buildings.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured

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learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Construction faults include those occurring in:

- initial constructions
- installations
- refurbishments
- renovations
- restorations.

Open classification within the BCA refers to:

- all classes of building and types of construction.

Australian standards may include:

- AS1288 Installation of glass in buildings
- AS1684 Residential timber framed construction
- AS2050 Fixing of roof tiles
- AS2180 Metal rainwater goods, selection and installation
- AS2208 Safety glazing materials for use in buildings
- AS3500 National plumbing

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RANGE STATEMENT

- AS3600 Concrete structures
- AS3660 Protection of buildings from subterranean termites
- AS3700 Masonry
- AS3740: 2004 Waterproofing of wet areas in residential buildings
- AS4349 Inspection of buildings.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBC6017A Evaluate services layout and connection methods for the planning of large building projects

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to evaluate the layout of services and connection methods in large, high rise and complex buildings (open' licensing classification with special reference to Type A buildings).

It includes the evaluation of cold and hot water supply, sewerage layout, electric and electronic installation requirements, and smoke and fire preventative systems.

It requires compliance with relevant legislation, Australian standards and the Building Code of Australia (BCA).

Builders and other related construction industry professionals for whom this unit is relevant, exercise personal judgement based on their knowledge, skills and experience. They must also coordinate the input and expertise of a range of other professionals in order to assess construction faults and determine appropriate responses.

Application of the Unit

Application of the unit

This unit of competency supports builders, related construction industry professionals and senior managers within building and construction firms responsible for managing the evaluation of service layout and connection methods.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Evaluate layouts of water supply for general and firefighting use.	1.1. Relevant professional expertise is sought to analyse the technical robustness of the planned solution for provision of ***water supply*** for general and ***firefighting services use***.
	1.2. Water supply, connection and layout specified in the building and construction plans are identified, evaluated and recorded as part of the building and construction planning process and in accordance with BCA, relevant legislation and Australian standards.
	1.3. Installation of water services supplying fire hydrants, fire hose reels and fire sprinkler systems is identified, evaluated and recorded in accordance with BCA, relevant legislation and Australian standards.
	1.4. Interconnection of water tanks for fire services is emulated in intent of non-return to original tanks and results are evaluated.
2. Evaluate sewerage and drainage disposal methods and their layouts.	2.1. Relevant professional expertise is sought to analyse the technical robustness of planned solution for the provision of sewerage and drainage disposal methods and their layouts.
	2.2. ***Sewerage connection*** and layout are identified, evaluated and recorded in accordance with the BCA, relevant legislation and Australian standards.
	2.3. Connection methods of main drains to local authority sewers across open ground and within buildings for the whole site, are identified, evaluated and recorded.
	2.4. Disposal of sewerage from fixtures situated below the level of local authority sewer for both domestic and commercial buildings are evaluated in accordance with BCA, relevant legislation and Australian standards.
	2.5. Methods for disposal of ***stormwater*** drainage systems are evaluated and documented in accordance with the BCA, relevant legislation and Australian standards.
	2.6. Design and installation of stormwater drainage systems are evaluated and documented in accordance with BCA, relevant legislation and Australian standards.
3. Evaluate smoke	3.1. Relevant professional expertise is sought to analyse

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ELEMENT	PERFORMANCE CRITERIA
hazard management, mechanical ventilation, air conditioning and methods of air filtration and layout.	the technical robustness of the planned solution for provision of smoke hazard management, ***mechanical ventilation and air conditioning***, and methods of air filtration and layout. 3.2. Terms used in mechanical ventilation are clearly recorded, stating how ventilation, volume, velocity and content may be controlled. 3.3. Methods of mechanical ventilation, air distribution and smoke hazard management are identified, evaluated and recorded in accordance with BCA, relevant legislation and Australian standards. 3.4. Air conditioning and mechanical ventilation basic elements are identified, evaluated and documented, including the function of air conditioning and applications for various types of occupancy in buildings.
4. Evaluate hot water systems and factors affecting selection.	4.1. Relevant professional expertise is sought to analyse the technical robustness of the planned solution for provision of ***hot water systems***. 4.2. Hot water systems are identified and evaluated according to design factors, types of system, height of installation, area to be serviced, number of outlets and energy sources available. 4.3. Operating principles of various types of hot water systems are evaluated and documented.
5. Identify natural lighting for varying situations and evaluate suitable lighting fixtures for a range of operations.	5.1. Relevant professional expertise is sought to analyse the technical robustness of the planned solution for provision of natural and artificial ***lighting systems***. 5.2. Natural lighting and general aims of design are identified in accordance with authorities and governing regulation requirements. 5.3. Artificial lighting and types of light sources are compared to recommended service luminance for various service situations in accordance with BCA, relevant legislation and Australian standards.
6. Evaluate firefighting and fire detection services.	6.1. Relevant professional expertise is sought to analyse technical robustness of the planned solution for provision of firefighting and fire detection services. 6.2. Authorities involved in the perusal of plans and site inspection for the various building classifications and their roles and functions are identified. 6.3. Requirements for sprinkler systems, fire hydrants and fire hoses for the various building classifications

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ELEMENT	PERFORMANCE CRITERIA
	are identified and evaluated in accordance with BCA, relevant legislation and Australian standards. 6.4. Fire detection and alarm systems are identified and evaluated in accordance with BCA, relevant legislation and Australian standards.
7. Determine requirements for general electrical and electronic service installation.	7.1. Relevant professional expertise is sought to analyse the technical robustness of planned solution for ***general electrical and electronic service*** installation. 7.2. Electrical supply authorities and the relevant legislation are identified and recorded. 7.3. Procedures for electrical supply and connection to site, and electrical design and provision for services and electronic cabling for the project, are identified, evaluated and recorded. 7.4. Design and installation of emergency warning systems, emergency lighting and exit signage systems are evaluated and recorded in accordance with the BCA and relevant Australian standards.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to evaluate impact of the requirement for service layout and connection methods on the construction process
- analysis and interpretation skills relating to documentation from a wide range of sources, including BCA and Australian standards
- application of design concepts and principles in accordance with Australian standards
- applying building codes and standards
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret:
    - Australian standards

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REQUIRED SKILLS AND KNOWLEDGE

- BCA
- legislation
- specifications
- working drawings
- seek professional expertise
- use and interpret non-verbal communication
- use language and concepts appropriate to cultural differences
- written skills to record relevant information
- numeracy skills ability to perform and apply measurements and calculations.

Required knowledge

Required knowledge for this unit is:

- design concepts and principles in relation to service installations
- general services installation terminology, definitions, installation methods and hazards
- nature of materials and effect of performance
- processes for the interpretation of working drawings and specifications
- relevant federal, state or territory legislation and local government policy and procedures
- research methods
- processes for the preparation of documentation
- terminology and methods of roof construction used for daylight transmission
- terminology and methods used in artificial lighting
- terminology with reference to items and services that may be used in plumbing, sewerage and drainage systems
- terminology with reference to vertical transportation.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by research, design, analysis, evaluation and reporting to determine service layout and connection methods for large and complex residential and commercial buildings.

Competency must be demonstrated within the context of relevant legislation, the BCA and Australian standards.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- coordinate and assess input received from technical experts
- comply with OHS regulations applicable to workplace operations
- apply organisational management policies and procedures, including quality assurance requirements where applicable
- evaluate the services layout, connection methods and rectification actions for at least one residential and one commercial building project or equivalent, which includes advice on hot and cold water supply, sewerage layout, electrical and electronic installation lighting systems, vertical transportation requirements and smoke and fire detection and prevention systems
- provide reports to appropriate body or individual as determined by project brief
- apply strategic plans, workplace policies and

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EVIDENCE GUIDE

	procedures.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • a situation, real or realistically simulated, requiring assessment of service layout and connection method requirements for residential and commercial buildings. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances

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EVIDENCE GUIDE

assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Water supply includes consideration of:

- town supply
- tank storage supply relative to public water supply and reservoir heights
- single and two-stage pumping for multi-function and single function connected services

Firefighting services use includes consideration of:

- sprinkler systems (BCA deemed-to-satisfy [DTS] provisions)
- fire hydrants
- fire hose reels and fire extinguishers

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RANGE STATEMENT

	• installation of fire stopping and fire collars • fire and smoke detection and alarm systems (BCA DTS provisions).
Sewerage connection includes consideration of:	• local authority sewerage drainage system • septic or bio-chemical treatment unit • graded or vertical discharge pipes • inspection shafts and overflow relief gullies (ORGs).
Stormwater includes consideration of:	• design, installation and disposal • connection to local government water drains • use of soakage pits and on-site water detection systems • size, location and construction requirements for eaves and box gutters • downpipes and unground or concealed piping.
Mechanical ventilation and air conditioning include:	• air conditioning applications • air distribution, including mechanical ventilation requirements for enclosed car parks • air filtration, including air filters, ducting and main filter types • air intake systems • fire dampers • fume discharge systems • installation of fire stopping • smoke control and exhaust systems • warm water and cooling towers.
Hot water systems include consideration of:	• area to be serviced • energy sources available • height of installation • number of outlets • type of occupancy • type of system.

Lighting systems include consideration of:	• emergency and exit signage systems
	• natural and artificial lighting
	• terms, such as:
	  • brightness
	  • control of glare
	  • installation of fire stopping
	  • intensity
	  • lifespan

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RANGE STATEMENT

	• locations for installation • reflections.

General electrical and electronic service systems include consideration of:	• categories of cabling:
	  • data
	  • lift controls
	  • power supplies
	  • telecommunications, including connection to site and distribution facilities
	• electrical supply authorities connection to site and distribution facilities (switch room and substations)
	• emergency lighting and exit signage systems
	• emergency warning and intercommunication systems
	• fire stopping
	• layout of equipment for:
	  • computers
	  • lift controls
	  • power supplies
	  • telephones
	• service system safeguards
	• service system access for maintenance, repair and extension
	• type of service (emergency power and alternative power sources).

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCBC6018A Manage processes for complying with legal obligations of a building or construction contractor

Modification History

Changes to unit title, descriptor, application, required knowledge and critical aspects
Not equivalent to CPCCBC6004A

Unit Descriptor

This unit of competency specifies the outcomes required to manage the processes to ensure the legal obligations of a building or construction contractor involved in either residential or commercial contracting projects are fully met.
It involves managing relationships with advisors and ensuring that the organisation meets the requirements of licensing, health and safety, welfare, workers compensation, taxation, insurance, fair trading and environmental legislation.

Application of the Unit

This unit of competency supports builders, project managers and related construction industry professionals responsible for ensuring the legal obligations of a contractor are met.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Manage compliance with laws relating to establishing and licensing of a building contractor.	1.1	Company employees are aware of and comply with requirements of ***laws relating to establishing and licensing of a building contractor***.
		1.2	Company takes necessary steps to obtain the necessary building or construction licenses.
		1.3	Changes to licensing arrangements are identified and responded to in a timely manner.
		1.4	Staff members are advised of the consequences of non-compliance with relevant legal obligations.
2	Manage relationships on legal matters.	2.1	Processes are introduced and managed which enable the company to obtain such legal advice as may be required in relation to particular contracts.
		2.2	Systems are introduced and managed through which legal interpretations of contract clauses or clauses within tender documents may be obtained before submission of the tender.
		2.3	Mechanisms for dialogue are established and managed between the company and the client to improve communication and facilitate conciliation.

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3	Manage the administration of regulations relating to work health and safety (WHS) and welfare, workers' compensation, noise abatement and working hours.	3.1	Administration systems that facilitate the organisation conforming to its obligations and ***regulations*** under WHS and welfare, workers' compensation, noise abatement and working hours, are developed and managed.
		3.2	Records demonstrating organisational compliance with legal obligations are maintained and managed.
		3.3	Administrative guidelines and facilities for the proper and secure storage of organisational legal documentation are established and managed.
4	Manage company compliance with taxation and insurance requirements of federal, state and territory legislation.	4.1	Systems that support and maintain organisational capacity to meet ***legal obligations with regard to insurance and taxation*** are instigated and managed.
		4.2	Personnel receive appropriate training and instruction in matters relating to insurance and taxation and are made aware of their responsibilities.
5	Manage organisational obligations and observe fair trading practice.	5.1	Practices and policies are developed and implemented which facilitate the organisation meeting its obligations to its clients, subcontractors and employees.
		5.2	Codes of conduct are established and enforced for all employees and subcontractors.
		5.3	Remedial action is taken where evidence of non-compliance with fair trading principles is identified.
6	Manage compliance with environmental legislation.	6.1	Mechanisms to gather information in relation to the organisational environmental management plan are established and managed.
		6.2	Supply and removal of subcontract works and materials are managed and subject to constant scrutiny to ensure compliance with environmental standards.
		6.3	Changes to legislation or environmental requirements are recorded and organisational activities and systems altered to ensure ongoing compliance.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - communicate with clients
  - provide information and training to staff
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to maintain records
- initiative and enterprise skills to conceptualise and envisage unique solutions to complex problems and situations
- facilitation skills to implement new and modified contract management systems
- literacy skills to:
  - interpret strategic and often ambiguous information to ensure logical and practical decisions
  - read and interpret legislation, contracts and other relevant documentation
- management skills to delegate tasks within specific functional guidelines and direct the activities of personnel involved in the contracts management process
- supervisory skills to monitor and oversee the performance of the contract management systems and individuals involved in the process
- technology skills to facilitate use of the organisation's software and office equipment

Required knowledge

- appropriate sector of the building and construction industry and the nature of the contracts upon which its activities are based
- factors to be considered in assessing the risk inherent in different types of building and construction projects
- financial and business administration principles commensurate with organisational needs
- human resource practices and the industry's industrial relations climate and practices
- legislative, regulatory, and administrative obligations incumbent on a building and construction contractor for licensing, WHS, welfare, workers compensation, noise abatement, working hours, taxation, insurance, fair trading and care of the environment

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by the development and implementation of policies, practices and administrative measures which ensure an organisation meets its legal obligations in a timely manner.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- ensure contractor licensing requirements are met
- develop and maintain relationships with appropriate legal advisors and obtain advice and clarification as required
- establish and maintain suitable communication mechanisms between the organisation and its clients
- develop and manage administrative systems to facilitate compliance with legislation
- develop and manage appropriate record-keeping procedures and storage of legal documentation
- ensure relevant personnel are informed, trained and updated regarding legal requirements and consequences of non-compliance
- manage organisational activities and systems to ensure ongoing legal compliance.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or

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Australian standards' requirements.

Resource implications for assessment include:

- documentation normally available in either a building or construction office
- relevant codes, standards and regulations
- office equipment, including calculators, photocopiers and telephone systems
- computers with appropriate software
- a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature
- copies of appropriate awards and workplace agreements
- a suitable work area appropriate to the construction process.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further

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learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Laws relating to establishing and licensing of a building contractor include state laws such as:

- Builders Registration Act 1939 and the Home Building Contracts Act 1991 in Western Australia
- Home Building Act and Regulations 1989 in New South Wales.

Regulations include:

- federal, state or territory environmental protection legislation
- local government Acts and the by-laws derived from them
- state and federal industrial relations legislation
- state codes of practice applicable to the various regulations
- state laws, such as the Workers Compensation and Rehabilitation Act 1981 in Western Australia
- state WHS legislation and regulations.

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Legal obligations with regard to insurance and taxation include:

- appropriate business and project insurances
- Fringe Benefits Tax Act 1986
- Goods and Services Tax Act 1999
- Income Tax Assessment Act 1987
- Insurance Contracts Act 1984
- pay-as-you-go (PAYG) taxes
- payroll tax
- stamp duty
- workers' compensation.

Unit Sector(s)

Functional area

Unit sector Construction

Custom Content Section

Not applicable.

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CPCCBL2001A Handle and prepare bricklaying and blocklaying materials

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to safely handle bricklaying and blocklaying materials manually and mechanically, including their storage requirements. It also includes preparatory mixing requirements and environmental requirements for the disposal of waste.

Application of the Unit

Application of the unit

This unit of competency supports achievement of skills and knowledge for the manual and mechanical handling, sorting and stacking of bricklaying and blocklaying materials in support of bricklaying and blocklaying work on a work site, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information***.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. Plant, ***tools and equipment*** selected to carry out ***bricklaying and blocklaying tasks*** are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
	1.5. Material quantity requirements are calculated in accordance with plans and specifications.
	1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Manually handle bricklaying and blocklaying materials.	2.1. ***Bricklaying and blocklaying materials and components*** are identified and checked for conformity to material schedule, plans and specifications.
	2.2. Handling characteristics of bricklaying and blocklaying materials and components are identified and safe and effective handling techniques, including ***mechanical handling***, are applied.
	2.3. Bricklaying and blocklaying materials and components are ***sorted and stacked*** for support of the job in accordance with supervisor's instructions and/or specifications.
	2.4. Bricklaying and blocklaying materials and components are protected against physical damage and stored clear of traffic ways.
3. Perform mechanical handling of materials.	3.1. Bricklaying and blocklaying materials and components are prepared and positioned for mechanical handling in accordance with type of material and plant or equipment to be used.

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ELEMENT	PERFORMANCE CRITERIA
	3.2. Materials and components are loaded, unloaded, moved, located and/or installed in accordance with workplace procedures.
	3.3. Bricklaying and blocklaying materials and components are safely handled with assistance of mechanical lifting devices in accordance with workplace requirements.
4. Mix bricklaying and blocklaying mortar.	4.1. Mortar ingredients are identified and positioned in the vicinity of the mixing area.
	4.2. Mixing equipment is prepared and operated in accordance with manufacturers' instructions and workplace procedures.
	4.3. Mortar is mixed to specifications in accordance with workplace procedures.
5. Handle and remove waste materials.	5.1. Waste bricklaying and blocklaying materials and components are handled in accordance with material safety data sheet (MSDS) and regulatory requirements.
	5.2. Hazardous material is identified for separate handling.
	5.3. Non-toxic materials are removed using appropriate procedures.
	5.4. ***Dust suppression procedures*** are used to minimise health risk to work personnel and others.
6. Clean up.	6.1. Work area is cleared and ***waste materials*** disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	6.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

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REQUIRED SKILLS AND KNOWLEDGE

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- bricklaying and blocklaying materials
- calculation of and techniques for preparing mixes
- construction terminology
- hazards associated with the use of bricklaying and blocklaying tools, plant and equipment
- job safety analysis (JSA) and safe work method statements
- manual handling techniques
- materials storage and environmentally friendly waste management
- MSDS
- plans, specifications and drawings
- processes for the calculation of material requirements
- quality requirements
- techniques for bricklaying and blocklaying tasks
- types, characteristics, uses and limitations of plant, tools and equipment
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- demonstrate safe and effective use of tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum:
  - on a ground level work site, manually relocate a pallet of bricks and associated mortar, aggregate and cement from a storage site in proximity to a specified work area and set out to reflect the laying sequence for a job requiring the blending of bricks (by colour and/or texture)
  - using manual and mechanical means, relocate a pallet of bricks to a raised platform
  - set up a cement mixer and mix a quantity of mortar to Australian standard AS3700 M3 standard, using the bucket gauging technique.

Context of and specific resources

This competency is to be assessed using standard

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EVIDENCE GUIDE

for assessment	and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments.

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EVIDENCE GUIDE

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational

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RANGE STATEMENT

	or external personnel • manufacturer specifications and instructions where specified • memos • MSDS • organisation work specifications and requirements • plans and specifications • regulatory and legislative requirements pertaining to handling and preparing bricklaying and blocklaying materials • relevant Australian standards • safe work procedures related to handling and preparing bricklaying and blocklaying materials • signage • verbal or written and graphical instructions • work bulletins • work schedules.

Safety (***OHS***) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including emergency shutdown and stopping, extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • underground services, including water, gas, electricity and communications
	  • work site visitors and the public
	  • working at heights

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RANGE STATEMENT

	• working in confined spaces • working in proximity to others • working with dangerous materials • organisational first aid • personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices • use of firefighting equipment • use of tools and equipment • workplace environment and safety.
Tools and equipment:	• include: • bolsters • brick grabs • brooms • builders' lines • concrete mixers • hammers (brickies, club and scutch) • hoses • jointing tools • line blocks • line pins • masonry saws • measuring tapes and rules • mortar boards • profiles • rakes • shovels • spirit levels • straight edges • trowels • wheelbarrows • may include: • brick buggies • elevators • forklifts • materials hoists • pallet trolleys • scaffolds.

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RANGE STATEMENT

Bricklaying and blocklaying tasks:	• include all clay brick (wire cut/pressed) and concrete block (hollow and solid) masonry work • may be performed on a new construction site, an existing structure being renovated or extended or an existing structure subject to service restoration or maintenance.
Materials include:	• aggregates • cement, lime and waterproofing materials • clay bricks • masonry blocks • reinforcing materials • sealants • timber and plyboard.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Bricklaying and blocklaying materials and components may be sorted according to:	• ease of identification • task sequence and job allocation • type, size, colour and texture.
Mechanical handling includes:	• elevators • forklifts • materials hoists • pallet trolleys.
Sorted and stacked materials may be protected by:	• covering • tying and banding • barricading • signage • securing (hazardous materials).
Dust suppression procedures include:	• covering • spraying with water • using vacuum cleaner.
Waste materials include:	• banding straps • broken of damaged materials or components • cardboard, plastic, paper and loose material • packing pieces.

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Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBL2002A Use bricklaying and blocklaying tools and equipment

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to use tools and equipment used in bricklaying and blocklaying safely and effectively. It includes the identification, selection and use of hand and power tools, plant and equipment used in masonry work.

Application of the Unit

Application of the unit

This unit of competency supports achievement of skills for the identification, selection, preparation and safe and effective application of hand and power tools, plant and equipment for their intended bricklaying and blocklaying tasks.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information***.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Identify hand and power tools.	2.1. Types and functions of bricklaying and blocklaying ***hand and power tools***, ***plant and equipment*** to be used in the bricklaying and blocklaying work are identified.
	2.2. Methods of operation of hand and power tools are identified from specifications, standards and manufacturers' instructions.
	2.3. Specific OHS requirements for specific hand and power tools are identified and applied.
	2.4. Personal protective equipment required for the operation of the tools is identified in accordance with regulatory and workplace requirements.
3. Select tools for work.	3.1. Tools and personal protective equipment are selected consistent with job requirements and ***bricklaying and blocklaying tasks***.
	3.2. Tools, including leads and hoses, are checked for tags, serviceability and safety and any faults are reported to supervisor.
	3.3. Power tools guards, guides and controls are checked and maintained in accordance with manufacturer recommendations.
	3.4. Equipment to hold or support material during operation is selected and inspected for faults.
	3.5. Pre-operational checks, including lubricants, hydraulic fluid and water are completed, where required, according to manufacturer recommendations.
4. Use tools.	4.1. Power and compressed air supply to work area are connected in accordance with regulatory

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ELEMENT	PERFORMANCE CRITERIA
	requirements and codes of practice.
	4.2. Start up and shut down procedures are observed.
	4.3. Tools are used safely and effectively according to manufacturer recommendations and regulatory requirements.
	4.4. Tools are safely located when not in use.
5. Identify and select plant and equipment.	5.1. Function and limitations of plant and equipment to be used in the bricklaying and blocklaying work are identified.
	5.2. Method of operation of plant and equipment is identified from specifications, standards and manufacturers' instructions.
	5.3. OHS requirements for specific plant and equipment, including requirements for guarding, guiding and controls, are identified and applied.
	5.4. Personal protective equipment required for the operation of plant and equipment is identified in accordance with regulatory and workplace requirements.
	5.5. Items of plant and equipment are selected consistent with hazard minimisation and needs of the job.
	5.6. Plant and equipment are checked for safety, and faults are reported to supervisor.
	5.7. OHS requirements for operating and using plant and equipment are recognised and adhered to.
6. Use plant and equipment.	6.1. Start up and shut down procedures are observed.
	6.2. Plant and equipment are used safely and effectively according to manufacturer recommendations and statutory and regulatory authority requirements.
	6.3. Plant and equipment are safely switched and located when not in use.
7. Clean up.	7.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	7.2. Machinery, ***tools and equipment*** are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - drawings and specifications
    - manufacturers' instructions
    - other relevant documentation
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- applications, limitations and method of operation and maintenance of hand and power tools, plant and equipment applicable to bricklaying and blocklaying tasks
- construction terminology
- hazards associated with the use of bricklaying and blocklaying tools, plant and equipment
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- processes for the calculation of material requirements
- quality requirements

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REQUIRED SKILLS AND KNOWLEDGE

- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- use prescribed brick and blocklaying tools and equipment
- set up a cement mixer and mix mortar for the next task
- construct a brick wall 600mm high and at least 1200mm long in stretcher bond with a round iron joint finish with all halves to be hand cut and scutched
- use a jig saw to develop an arch centre or curved wall template
- use a brick saw to cut:
  - a 110mm bat
  - a 170mm (3/4) bat
  - a queen closure
  - a split

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EVIDENCE GUIDE

- a compound mitre
- use a block saw to cut 10 of each 200 and 100 series blocks to various sizes.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles

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EVIDENCE GUIDE

- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

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RANGE STATEMENT

Information includes:	• diagrams or sketches • instructions issued by authorised organisational or external personnel • manufacturer specifications and instructions where specified • memos • MSDS • organisation work specifications and requirements • plans and specifications • regulatory and legislative requirements pertaining to the use of bricklaying and blocklaying hand and power tools, plant and equipment • relevant Australian standards • safe work procedures related to the use of bricklaying and blocklaying hand and power tools, plant and equipment • signage • verbal or written and graphical instructions • work bulletins • work schedules.

Safety (***OHS***) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including emergency shutdown and stopping, extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • traffic control
	  • trip hazards
	  • underground services, including water, gas, electricity and communications

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RANGE STATEMENT

	• work site visitors and the public • working at heights • working in proximity to others • working with dangerous materials • organisational first aid • personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices • use of firefighting equipment • use of tools and equipment • workplace environment and safety.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Hand and power tools, plant and equipment:	• include those required to facilitate the effective laying of bricks and blocks and include: • bolsters • brick grabs • brooms • builders' lines • concrete mixers • hammers (brickies, club and scutch) • hoses • jig saws • jointing tools • line blocks • line pins • masonry saws • measuring tapes and rules • mortar boards • profiles • rakes • shovels • spirit levels • straight edges

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RANGE STATEMENT

	• trowels • wheelbarrows • may include: • bricksaws • circular saws • elevators • materials hoists • scaffolds • small petrol or diesel engines, compressors or mixers.
Bricklaying and blocklaying tasks:	• include all clay brick (wire cut/pressed) and concrete block (hollow and solid) masonry work • may be performed on a new construction site, an existing structure being renovated or extended or an existing structure subject to service restoration or maintenance.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBL3001A Lay paving

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to lay pavers on level and inclined surfaces. It includes preparing, setting out and laying of the paving.

Application of the Unit

Application of the unit This unit of competency supports achievement of the skills for laying paving material to pave external areas. Paving may be performed on a new construction site, an existing structure being renovated or extended, or an existing structure subject to service restoration or maintenance, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information***.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. Plant, ***tools and equipment*** are selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
	1.5. Material quantity requirements are calculated in accordance with plans and specifications.
	1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Set out work area.	2.1. Location and area of ***paved area*** are identified from plans and specifications.
	2.2. Sub-soil and footing types are identified and classified according to standards.
	2.3. Underground services are located and avoided throughout work process.
	2.4. Location and shape of paving area are set out to dimensions from plans and specifications.
3. Lay paving.	3.1. Area is excavated to required depth, allowing for base and thickness of unit and specified finish level.
	3.2. Drainage pipes are positioned in sub soil in accordance with regulatory authorities' requirements, plans and specifications.
	3.3. Mortar for masonry paving is mixed to specifications and standards.
	3.4. ***Substrate*** base material is spread and compacted to specifications.
	3.5. ***Bedding material*** is spread and screeded to designed level and alignment.
	3.6. Edge boards are positioned to set out and

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ELEMENT	PERFORMANCE CRITERIA
	specifications. 3.7. Paving surface is graded to fall evenly, without ponding, to outlets or surface run-off system. 3.8. Initial starting line is determined and pavers are laid to line conforming with specified pattern. 3.9. Paving units and segments are cut and laid to designed pattern and specifications, with joints to specifications and surface finish aligned. 3.10. Finished level is maintained across junctions between different finishes. 3.11. Paving installation is completed with ***joints finished*** to specifications. 3.12. Paving surface is cleaned on completion to specifications.
4. Clean up.	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 4.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults

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REQUIRED SKILLS AND KNOWLEDGE

- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- characteristics and applications of materials for laying pavers
- construction terminology
- corner geometry
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- paving bonds and patterns, joints and finishing
- plans, specifications and drawings
- processes for the calculation of material requirements
- quality requirements
- techniques for laying pavers
- types, characteristics, uses and limitations of plant, tools and equipment
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum, pave a level area of 3m x 5m with clay pavers, using sand as a bedding material on compacted crushed rock (closed finish with sand brushed in); and pave an area of 3m x 5m over a fall with clay bricks, incorporating control joints and using mortar as a bedding material on concrete (mortar joints finish), ensuring:
  - correct identification of requirement and finishing of the tasks
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge

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EVIDENCE GUIDE

will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the

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EVIDENCE GUIDE

workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS

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RANGE STATEMENT

	• organisation work specifications and requirements • plans and specifications • regulatory and legislative requirements pertaining to laying pavement • relevant Australian standards • safe work procedures related to laying pavement • signage • verbal or written and graphical instructions • work bulletins • work schedules.

Safety (***OHS***) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including emergency shutdown and stopping, extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • underground services, including water, gas, electricity and communications
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	  • working with dangerous materials
	• organisational first aid
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
	• use of firefighting equipment
	• use of tools and equipment

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RANGE STATEMENT

- workplace environment and safety.

Tools and equipment:

- include:
  - bolsters
  - buckets
  - builder's squares
  - builders' lines
  - concrete mixers
  - hammers
  - hoses
  - line blocks
  - line pins
  - mason's squares
  - masonry saws
  - measuring tapes and rules
  - mortar boards
  - power leads
  - rakes and brooms
  - rubber mallets
  - screed boards
  - shovels
  - spirit levels
  - straight edges
  - string lines
  - trowels
  - vibrating plates
  - wheelbarrows
- may include:
  - brick buggies
  - forklifts
  - pallet trolleys
  - small petrol or diesel engines, compressors or mixers.

Materials include:

- bedding materials
- clay bricks and clay pavers
- concrete blocks
- concrete pavers
- mortar and sand
- paving materials

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RANGE STATEMENT

	• slate (random and regular) • stone segments • waterproofing materials.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Paved areas include:	• cycle and walking tracks • footpaths • malls • patios • platforms • ramps and inclined surfaces • roads • sports arenas.
Substrate includes:	• compacted crushed rock • concrete.
Bedding material includes:	• adhesives • bedding sand • cement mortar • mortar with adhesive additive.
Joints finished include:	• closed joints • closed joints with sand brushed in • mortar joints.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCBL3002A Carry out masonry veneer construction

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to construct masonry veneer buildings and structures. It includes planning, preparation, set out and installation of the masonry.

Application of the Unit

Application of the unit This unit of competency supports achievement of brick and blocklaying skills sufficient to construct a brick or block veneer building, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** to determine ***bricklaying and blocklaying tasks***.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
	1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
	1.6. ***Materials*** appropriate to work application, including required fire resistance rating, are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Set out brickwork/blockwork.	2.1. Bricks/ blocks are identified, selected and checked for conformity with specifications and compliance with standards.
	2.2. Work platform is erected in accordance with regulatory and workplace requirements.
	2.3. Location and structural details of brickwork/blockwork are identified from plans and job specifications.
	2.4. Base brickwork below floor construction is set out to ***location***, dimensions and specifications in compliance with standards.
	2.5. Brickwork/blockwork is set out to location and dimensions from drawings and specifications.
3. Construct base brickwork/blockwork.	3.1. Mortar mix is prepared and checked for conformity and bricks/blocks laid to set out to specifications and standards.
	3.2. Brickwork/blockwork gauge is determined and set

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ELEMENT	PERFORMANCE CRITERIA
	out rod is prepared.
	3.3. Base brickwork/blockwork is constructed for veneer construction to requirements of regulations and specifications.
	3.4. Sub-floor ventilation is installed in accordance with specifications.
4. Construct veneer walls.	4.1. Structural frame is checked to ensure it is ready for ***brick or block veneer construction*** maintaining minimum cavity.
	4.2. Damp proof courses are installed to specifications and in accordance with standards.
	4.3. Ventilation for veneer construction is built to specifications and requirements of standards.
	4.4. Wall ties are positioned and correctly fixed to framework to standards.
	4.5. Openings are constructed and flashings installed to job specifications.
	4.6. Cavities are kept clear of mortar droppings and bridging.
	4.7. Lintels are installed to job specifications.
	4.8. Top brickwork/blockwork is constructed to eaves/gable level in accordance with standards.
	4.9. Veneer gable is constructed as required by plans and specifications.
	4.10. Walls are built to gauge straight and true in plumb, line and level within standards tolerance.
	4.11. Control joints are formed in accordance with locations on job drawings, specifications and standards.
	4.12. Weepholes, brick/block reinforcing, vermin proofing and wall flashing are located and built in to job specifications.
	4.13. Sill bricks are cut where required and laid to line in accordance with job specifications.
5. Rake/rule joints and clean face.	5.1. Joints of laid brickwork/blockwork are raked or ruled to correct depth and profile in accordance with job specifications.
	5.2. Brickwork/blockwork is brushed down prior to drying to remove unwanted mortar and face is cleaned.
	5.3. Excess mortar is removed from brick/blockwork surfaces and cavities are cleaned free of mortar and

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ELEMENT	PERFORMANCE CRITERIA
	debris in accordance with manufacturer recommendations, job specifications and standards.
6. Clean up.	6.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	6.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- brick and block expansion and growth, control and articulation joints

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REQUIRED SKILLS AND KNOWLEDGE

- brick bond patterns
- characteristics and applications of materials for masonry veneer construction, including fire control and separation required by the Building Code of Australia (BCA) and other legislation
- construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- processes for the calculation of material requirements
- quality requirements
- techniques of masonry veneer construction, including gable and eaves construction, damp proofing, flashings and ventilation, vermin control, anti-termite measures, floor, wall and roof members, tying components, timber shrinkage, sub-floor construction, lintels and load bearing components
- types, characteristics, uses and limitations of plant, tools and equipment
- workplace and equipment safety requirements.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations

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EVIDENCE GUIDE

- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum, given the plans and specifications, construct a section of a brick veneer building, including set out and gauge brickwork to a base; damp proof course (DPC) if applicable, weepholes, air vents, control joints and veneer ties; lintels and flashings; brick gables; and brick sills and flashings; ensuring:
  - correct identification of requirement and finishing of the task
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification, ensuring correct selection and use of fire-rated materials and methods of construction.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related

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EVIDENCE GUIDE

systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in

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EVIDENCE GUIDE

relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements pertaining to carrying out masonry veneer construction
- relevant Australian standards
- safe work procedures related to carrying out masonry veneer construction
- signage
- verbal or written and graphical instructions
- work bulletins
- work schedules.

Bricklaying and blocklaying tasks:

- include all clay brick (wire cut/pressed) and concrete block (hollow and solid) masonry work

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RANGE STATEMENT

	• performed on a new construction site, an existing structure being renovated or extended or an existing structure subject to service restoration or maintenance.

Safety (***OHS***) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including emergency shutdown and stopping, extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • underground services, including water, gas, electricity and communications
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	  • working with dangerous materials
	• organisational first aid
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environment and safety.

Tools and equipment:	• include:
	  • bolsters
	  • brick grabs
	  • brooms

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RANGE STATEMENT

- buckets
- builders' lines
- concrete mixers
- dumpy levels
- elevators
- hammers (brickies, club and scutch)
- hoses
- jig saws
- jointing tools
- line blocks
- line pins
- mason's squares
- masonry saws
- measuring tapes and rules
- mortar boards
- plumb rules
- margin or raking tools
- profiles
- shovels
- spirit levels
- straight edges
- string lines
- trowels
- wheelbarrows

- may include:
  - brick buggies
  - elevators
  - forklifts
  - materials hoists
  - pallet trolleys
  - scaffolds
  - small petrol or diesel engines and compressors.

Quality requirements include relevant regulations, including:

- Australian standards
- internal company quality policy and standards
- manufacturer specifications, where specified
- workplace operations and procedures.

Materials include:

- aggregates

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RANGE STATEMENT

	• cement • clay bricks • lime • masonry blocks • reinforcing materials • waterproofing materials.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Location brickwork laid may be on a:	• slab • suspended floor.
Brick or block veneer construction includes:	• straight, square and plumb brick/block, wall ties and reinforcement, dampcourse and flashings, installation of sills to door and window openings and lintels installed over openings and sill flashings • methods include ensuring compliance with incipient spread of fire requirements.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBL3003A Carry out cavity brick construction

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to construct cavity brick/block buildings and structures. It includes planning, preparation, set out and installation of the masonry.

Application of the Unit

Application of the unit This unit of competency supports achievement of skills in laying bricks to construct a cavity brick building, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied to determine ***bricklaying and blocklaying tasks***.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
	1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
	1.6. ***Materials*** appropriate to the work application, including required fire resistance rating, are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Set out brickwork/ blockwork.	2.1. Bricks and/or blocks are identified, selected and checked for conformity with specifications and compliance with standards.
	2.2. Work platform is erected in accordance with regulatory and workplace requirements.
	2.3. ***Location*** and structural details of brickwork/blockwork are identified from job drawings and job specifications.
	2.4. Base brickwork below floor construction is set out to location, dimensions and specifications in compliance with standards.
	2.5. Load bearing brickwork, including engaged piers, dwarf walls, isolated piers and corbelling are set out to job drawings and specifications.
	2.6. Cavity brick wall is set out to requirements of job drawings.
3. Construct base	3.1. Mortar mix is prepared and checked for conformity

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ELEMENT	PERFORMANCE CRITERIA
brickwork/ blockwork.	and bricks/blocks are laid to set out according to specifications and standards. 3.2. Brickwork/blockwork gauge is determined and set out rod is prepared. 3.3. Base brickwork/blockwork is constructed for cavity construction to requirements of regulations and specifications.
4. Position door and window frames.	4.1. Window frames are located and built in to cavity walls to specification, and are protected from mortar droppings during construction. 4.2. Door jambs are located, built in and fixed to cavity walls and single leaf walls according to job drawings and specifications.
5. Construct brick walls.	5.1. ***Brick or block cavity construction*** walls are constructed to job specifications and standards. 5.2. Damp proof courses and flashings are laid/built in to job specifications. 5.3. Ventilation for solid brick construction is built to requirements of job specification and regulations. 5.4. Walls are to be straight and true in plumb, line and level within standard tolerances. 5.5. Wall ties are positioned to comply with standards. 5.6. Openings are constructed and flashing is installed to job specifications. 5.7. Lintels are installed to job specifications. 5.8. Control joints are formed in accordance with locations on job drawings and standards. 5.9. Weepholes, brick reinforcing, vermin proofing and wall flashings are located and built in to job specifications. 5.10. Gables and parapets are constructed by plans and specifications. 5.11. Sill bricks are cut and laid to line in accordance with job specifications. 5.12. Tie down and lateral support systems for ceiling/roof structures are installed to walls in accordance with plans, specifications and standards.
6. Rake or rule joints.	6.1. Joints of laid brickwork/blockwork are raked or ruled to correct depth and profile in accordance with job specifications. 6.2. Brickwork/blockwork is brushed down prior to

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ELEMENT	PERFORMANCE CRITERIA
	drying to remove unwanted mortar.
	6.3. Excess mortar is removed from brick/blockwork surfaces and cavities are cleaned free of mortar and debris in accordance with manufacturer recommendations, job specifications and standards.
7. Clean up.	7.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	7.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

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REQUIRED SKILLS AND KNOWLEDGE

Required knowledge for this unit is:

- brick and block expansion and growth, control and articulation joints
- brick bond patterns
- characteristics and applications of materials for cavity brick construction, including fire control and separation required by the Building Code of Australia (BCA) and other legislation
- construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- processes for the calculation of material requirements
- quality requirements
- techniques of cavity brick construction, including:
  - anti-termite measures
  - closing of cavities and capping systems
  - damp proofing
  - floor, wall and roof members
  - gable and eaves construction
  - lintels and load bearing components
  - stepped and level flashing for parapets and gables
  - sub-floor construction
  - tying components
  - ventilation
  - vermin control
- types, characteristics, uses and limitations of plant, tools and equipment
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum, given the plans and specifications, construct a section of a cavity brick building, including sub-floor walling; damp proof course (DPC) and ventilation; attached and isolated piers; openings (window and door) and lintels; brick cavity ties and roof tie-downs; and parapets (stepped flashing), ensuring:
  - correct identification of requirement and finishing of the task
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification ensuring correct selection and use of fire-rated materials and methods of construction.

Context of and specific

This competency is to be assessed using standard

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EVIDENCE GUIDE

resources for assessment	and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments.

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EVIDENCE GUIDE

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- verbal or written and graphical instructions
- signage

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RANGE STATEMENT

	• work schedules • plans and specifications • work bulletins • memos • MSDS • diagrams or sketches • safe work procedures related to carrying out cavity brick construction • regulatory and legislative requirements pertaining to carrying out cavity brick construction • manufacturer specifications and instructions where specified • organisation work specifications and requirements • instructions issued by authorised organisational or external personnel • relevant Australian standards.
Bricklaying and blocklaying tasks:	• include all clay brick (wire cut/pressed) and concrete block (hollow and solid) masonry work • may be performed on a new construction site, an existing structure being renovated or extended or an existing structure subject to service restoration or maintenance.

Safety (***OHS***) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including emergency shutdown and stopping, extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control

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RANGE STATEMENT

- trip hazards
- underground services, including water, gas, electricity and communications
- work site visitors and the public
- working at heights
- working in confined spaces
- working in proximity to others
- working with dangerous materials
- organisational first aid
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- use of firefighting equipment
- use of tools and equipment
- workplace environment and safety.

Tools and equipment:

- include:
  - bolsters
  - brick grabs and margin or raking tools
  - brooms
  - buckets
  - builders' lines
  - concrete mixers
  - dumpy levels
  - elevators
  - hammers (brickies, club and scutch)
  - hoses
  - jig saws
  - jointing tools
  - line blocks
  - line pins
  - mason's squares
  - masonry saws
  - measuring tapes and rules
  - mortar boards
  - plumb rules
  - profiles
  - shovels
  - spirit levels
  - straight edges

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RANGE STATEMENT

	• string lines
	• trowels
	• wheelbarrows
	• may include:
	  • brick buggies
	  • elevators
	  • forklifts
	  • materials hoists
	  • pallet trolleys
	  • scaffolds
	  • small petrol or diesel engines or compressors.

Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Materials include:	• aggregates • cement • clay bricks • lime • masonry blocks • reinforcing materials • steel, aluminium and timber window frames • timber and steel door frames • waterproofing materials.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Location of laid brickwork may be on a:	• slab • suspended floor.
Brick or block cavity construction includes:	• straight, square and plumb brick/block, wall ties and lateral support systems, dampcourse and flashings, openings and reinforcement • ensuring compliance with incipient spread of fire requirements.

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Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBL3004A Construct masonry steps and stairs

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to construct masonry steps, stairs and wing walls for different types and styles of buildings. It includes planning, preparation, set out and installation of the masonry.

Application of the Unit

Application of the unit This unit of competency supports achievement of skills for laying of bricks to construct steps, stairs and wing walls, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** to determine ***bricklaying and blocklaying tasks***.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
	1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
	1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Set out brickwork/ blockwork.	2.1. Work platform is erected in accordance with regulatory and workplace requirements and ***brick and block stair construction*** requirements.
	2.2. Location and relative level of prepared footing are checked from job drawings and specifications.
	2.3. Rise and going of flight and individual steps are calculated to codes and workplace requirements.
	2.4. Flight and individual steps are set out from calculations and job drawings.
3. Lay bricks/blocks forming steps and wing walls.	3.1. Mortar mix is prepared and checked for conformity and bricks/blocks are laid to set out according to specifications, standards and codes.
	3.2. Base brickwork is constructed to specifications and requirements of standards and codes.
	3.3. Steps are formed square, level, plumb and true and laid to specified bond.
	3.4. Profile of steps is constructed to bond and design, aligned and plumb to specifications.

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ELEMENT	PERFORMANCE CRITERIA
	3.5. Parallel wing walls are formed to step alignment in accordance with specifications.
	3.6. Jointing is carried out to job specifications.
	3.7. Brickwork/blockwork is laid to line and set out with gauge and completed to job drawings, specifications, standards and codes.
	3.8. Brick/block faces are cleaned free of mortar.
4. Clean up.	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	4.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental

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REQUIRED SKILLS AND KNOWLEDGE

abilities

- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- brick and block expansion and growth, control and articulation joints
- brick bond patterns
- characteristics and applications of materials for masonry steps and stairs construction
- construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- processes for the calculation of material requirements
- quality requirements
- techniques of masonry steps and stairs construction
- types, characteristics, uses and limitations of plant, tools and equipment
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum, construct a flight of stairs with a minimum of three pre-cast treads, and construct a flight of three solid masonry treads with a parallel wing wall on one side, ensuring:
  - correct identification of requirement and finishing of the tasks
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

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EVIDENCE GUIDE

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances

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EVIDENCE GUIDE

assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements

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RANGE STATEMENT

	pertaining to constructing masonry steps and stairs • relevant Australian standards • safe work procedures related to constructing masonry steps and stairs • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Bricklaying and blocklaying tasks:	• include all clay brick (wire cut/pressed) and concrete block (hollow and solid) masonry work • may be performed on a new construction site, an existing structure being renovated or extended or an existing structure subject to service restoration or maintenance.

Safety (***OHS***) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including emergency shutdown and stopping, extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • underground services, including water, gas, electricity and communications
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	  • working with dangerous materials

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RANGE STATEMENT

	• organisational first aid • personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices • use of firefighting equipment • use of tools and equipment • workplace environment and safety.

Tools and equipment:	• include:
	  • bolsters
	  • brick grabs
	  • brooms
	  • buckets
	  • builders' lines
	  • concrete mixers
	  • dumpy levels
	  • elevators
	  • hammers (brickies, club and scutch)
	  • hoses
	  • jig saws
	  • jointing tools
	  • line blocks
	  • line pins
	  • mason's squares
	  • masonry saws
	  • measuring tapes and rules
	  • mortar boards
	  • plumb rules
	  • margin or raking tools
	  • profiles
	  • shovels
	  • spirit levels
	  • straight edges
	  • string lines
	  • trowels
	  • wheelbarrows
	• may include:
	  • brick buggies
	  • elevators

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RANGE STATEMENT

	• forklifts • materials hoists • pallet trolleys • scaffolds • small petrol or diesel engines or compressors.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Materials include:	• aggregates • cement • clay bricks • lime • masonry blocks • pre-cast concrete steps • waterproofing materials.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Brick and block stair construction includes:	• internal and external construction of steps and stairs • stairs involving straight flights, which may incorporate landings.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCBL3005A Lay masonry walls and corners

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to construct masonry walls and corners to different types and styles of buildings. It includes planning, preparation, set out and installation of the masonry.

Application of the Unit

Application of the unit This unit of competency supports achievement of skills for laying bricks or blocks to construct building walls and corners, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** to determine ***bricklaying and blocklaying tasks***.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
	1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
	1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Prepare materials and work site.	2.1. Work platform is erected in accordance with regulatory and workplace requirements.
	2.2. Bricks/blocks are selected according to quality requirements and specifications.
	2.3. Materials for mortar are selected to requirements of specification, standards and codes.
	2.4. Location of blockwork/brickwork is set out on reinforced concrete footing slab in accordance with dimensions and details from job drawings.
	2.5. Mortar is mixed in accordance with job specifications, standards and codes.
	2.6. Brickwork/blockwork gauge is determined and set out rod is prepared.
3. Lay bricks/blocks.	3.1. Mortar mix is prepared and checked for conformity and applied evenly to job and set out location.
	3.2. Bricks/blocks are located to job set out according to specifications, standards and codes.
	3.3. Bricks/blocks walls are to be straight and true in

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ELEMENT	PERFORMANCE CRITERIA
	plumb, line and level within standard tolerances and codes.
	3.4. Bricks/blocks are laid maintaining stretcher bond throughout construction to specifications, standards and codes and using appropriate ***joints in brick and block walls and corners***.
	3.5. Bricks are cut.
	3.6. Corners are formed maintaining bond and perpendicular intersection of both surfaces.
	3.7. ***Horizontal reinforcement*** is placed and laid to bed joints to specifications, where applicable.
	3.8. Brickwork/blockwork is laid and completed to job drawings, specifications, standards and codes.
4. Finish joints.	4.1. Excess mortar is removed from brick/blockwork surfaces and cavities are cleaned free of mortar and debris in accordance with manufacturer recommendations, job specifications, standards and codes.
	4.2. Joints of laid brickwork/blockwork are raked, struck or ruled to correct profile and depth to job specifications.
	4.3. Brickwork/blockwork is brushed down prior to drying to remove unwanted mortar.
5. Clean up.	5.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	5.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:

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REQUIRED SKILLS AND KNOWLEDGE

- determine requirements
- enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
- follow instructions
- read and interpret:
  - documentation from a variety of sources
  - plans, specifications and drawings
- report faults
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication, such as hand signals

- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

- brick and block expansion and growth, control and articulation joints
- brick bond patterns, types of joints and finishing
- characteristics and applications of materials for brick/block wall and corner construction
- construction terminology
- corner geometry
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- processes for the calculation of material requirements
- quality requirements
- techniques of brick/block wall and corner construction
- types, characteristics, uses and limitations of plant, tools and equipment
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum, in brick and in block, construct a wall between profiles to a line, including an internal corner, an external corner, and a stopped end to a minimum height of 1200mm (without toothing), ensuring:
  - correct identification of requirement and finishing of the tasks
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory

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EVIDENCE GUIDE

or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured

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EVIDENCE GUIDE

learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements

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RANGE STATEMENT

	• plans and specifications • regulatory and legislative requirements pertaining to laying masonry walls and corners • relevant Australian standards • safe work procedures related to laying masonry walls and corners • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Bricklaying and blocklaying tasks:	• include all clay brick (wire cut/pressed) and concrete block (hollow and solid) masonry work • may be performed on a new construction site, an existing structure being renovated or extended or an existing structure subject to service restoration or maintenance.

Safety (***OHS***) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including emergency shutdown and stopping, extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • underground services, including water, gas, electricity and communications
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others

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RANGE STATEMENT

- working with dangerous materials
- organisational first aid
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- use of firefighting equipment
- use of tools and equipment
- workplace environment and safety.

Tools and equipment:

- include:
  - bolsters
  - brick grabs
  - buckets
  - builder's squares
  - builders' lines
  - concrete mixers
  - dumpy levels
  - elevators
  - hammers (brickies, club and scutch)
  - hoses
  - jointing tools
  - line blocks
  - line pins
  - mason's squares
  - masonry saws
  - measuring tapes and rules
  - mortar boards
  - plumb rules
  - margin or raking tools
  - profiles
  - shovels
  - spirit levels
  - straight edges
  - string lines
  - trowels
  - wheelbarrows
- may include:
  - brick buggies
  - forklifts

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RANGE STATEMENT

	• materials hoists • pallet trolleys • scaffolds • small petrol or diesel engines, compressors or mixers.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Materials include:	• aggregates • cement • clay bricks • lime • masonry blocks • reinforcing materials • waterproofing materials.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Joints in brick and block walls and corners include:	• flush • raked • round iron/rule • struck • V joint • weather struck.
Horizontal reinforcement includes:	• steel bar • welded wire fabric • wire strands.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBL3006A Lay multi-thickness walls and piers

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to construct multi-thickness walls and piers for different types and styles of buildings. It includes planning, preparation, set out and construction of walls and piers.

Application of the Unit

Application of the unit This unit of competency supports achievement of skills for laying bricks to construct multi-thickness walls and piers in buildings and structures, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information***.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
	1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
	1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Set out brickwork.	2.1. Work platform is erected in accordance with regulatory and workplace requirements.
	2.2. ***Location*** and structural details of ***multi-thickness brickwork*** are determined from drawings and specifications.
	2.3. Set out area is located and footing is checked for conformity to dimensions and location as per job drawings, specifications and standards.
	2.4. Brickwork is set out to location according to dimensions from drawings and specifications.
3. Construct walls and attached piers.	3.1. Mortar is mixed and bricks are laid to set out for base and specified ***bond types*** in accordance with specifications and standards.
	3.2. Multi-thickness wall is constructed maintaining bond, and is completed to job specifications and standards.
	3.3. Attached piers are bonded to wall according to job specifications.
	3.4. Walls are to be straight and true in plumb line and

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ELEMENT	PERFORMANCE CRITERIA
	level within standard tolerances.
	3.5. Damp proof courses are built to specifications and standards.
	3.6. Openings are constructed and lintels are installed to job specifications and standards.
	3.7. Tie down and lateral support systems for ceiling and roof structures are installed to walls in accordance with plans, specifications, codes and standards.
4. Construct isolated piers.	4.1. Bricks are laid to set out and specified bond.
	4.2. Piers are constructed to application and requirements for line, level and plumb in construction projects, and bond is maintained to job specifications.
5. Finish joints.	5.1. Excess mortar is removed from brickwork surfaces and cavities are cleaned free of mortar and debris in accordance with manufacturer recommendations, job specifications, standards and codes.
	5.2. Joints of laid brickwork are raked or ruled to correct profile and depth in accordance with job specifications.
	5.3. Brickwork is brushed down prior to drying to remove unwanted mortar.
6. Clean up.	6.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	6.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements

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REQUIRED SKILLS AND KNOWLEDGE

- enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
- follow instructions
- read and interpret:
  - documentation from a variety of sources
  - plans, specifications and drawings
- report faults
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication, such as hand signals

- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- brick and block expansion and growth, control and articulation joints
- brick bond patterns (including corners, piers and junctions), types of joints and finishing
- characteristics and applications of materials for multi-thickness walls and piers construction
- construction terminology
- corner geometry
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- processes for the calculation of material requirements
- quality requirements
- techniques of multi-thickness walls and piers construction
- types, characteristics, uses and limitations of plant, tools and equipment
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum, construct three brick walls including one English bond, one Flemish bond and one other type with each to be a minimum of 230mm thick and 600mm high and contain at least one return corner; plus construct an isolated pier in brick using an appropriate bond of a minimum 470mm x 470mm, ensuring:
  - correct identification of requirement and finishing of the tasks
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge

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EVIDENCE GUIDE

will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the

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EVIDENCE GUIDE

workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS

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RANGE STATEMENT

	• organisation work specifications and requirements • plans and specifications • regulatory and legislative requirements pertaining to laying multi-thickness walls and piers • relevant Australian standards • safe work procedures related to laying multi-thickness walls and piers • signage • verbal or written and graphical instructions • work bulletins • work schedules.

Safety (***OHS***) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including emergency shutdown and stopping, extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • underground services, including water, gas, electricity and communications
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	  • working with dangerous materials
	• organisational first aid
	• personal protective clothing and equipment prescribed under legislation, regulations and

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RANGE STATEMENT

	workplace policies and practices • use of firefighting equipment • use of tools and equipment • workplace environment and safety.

Tools and equipment:	• include:
	  • bolsters
	  • brick grabs
	  • buckets
	  • builder's squares
	  • builders' lines
	  • concrete mixers
	  • dumpy levels
	  • elevators
	  • hammers (brickies, club and scutch)
	  • hoses
	  • jointing tools
	  • line blocks
	  • line pins
	  • mason's squares
	  • masonry saws
	  • measuring tapes and rules
	  • mortar boards
	  • plumb rules
	  • margin or raking tools
	  • profiles
	  • shovels
	  • spirit levels
	  • straight edges
	  • string lines
	  • trowels
	  • wheelbarrows
	• may include:
	  • brick buggies
	  • forklifts
	  • materials hoists
	  • pallet trolleys
	  • scaffolds
	  • small petrol or diesel engines, compressors

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RANGE STATEMENT

	or mixers.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Materials include:	• aggregates • cement • clay bricks • lime • reinforcing materials • waterproofing materials.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Location includes:	• a new construction site • an existing structure being renovated or extended • an existing structure subject to service restoration or maintenance.
Multi-thickness brickwork includes:	• installing reinforcement as specified • installing wall ties and lateral support systems as specified • laying bricks to a designed brick featured face, straight, square and plumb brick/block as specified • laying bricks to a specified bond to provide a designed structural stability, openings, fences, retaining walls, walls, columns and attached piers.
Bond types include:	• colonial (English and Flemish) • English • English garden wall • Flemish • stretcher for all clay brick (wire cut/pressed) masonry work.

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Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBL3007A Install glass blockwork

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to install glass blockwork to buildings. It includes preparation, set out and installation of the blocks.

Application of the Unit

Application of the unit This unit of competency supports achievement of skills to carry out the preparation for, setting out and installation of glass blocks, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** to determine laying of ***glass blockwork***.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
	1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
	1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Prepare for installation.	2.1. Location and dimensions of glass blockwork are determined from plans and specifications.
	2.2. Work platform is erected in accordance with regulatory authorities' and workplace requirements.
	2.3. Area for set out is located and base and abutting surfaces are checked for level and plumb, and are finished to specifications.
	2.4. Surface area preparation for blockwork installation is checked to be clean, dry and in accordance with manufacturer recommendations, plans and specifications.
	2.5. Wall or section of blockwork is set out to base details according to plans and specifications.
	2.6. Mortar mix is prepared and checked for conformity to specifications and standards.
3. Install glass blocks.	3.1. If required by specifications, frame is installed onto the base and fixed into position in accordance with manufacturer requirements.
	3.2. Mortar mix is applied according to manufacturer

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ELEMENT	PERFORMANCE CRITERIA
	recommendations, standards, plans and specifications.
	3.3. ***Glass blocks*** are laid to set out line, plumb, level and to design pattern in accordance with manufacturer recommendations, plans and specifications.
	3.4. Glass blockwork installation is completed to standards, plans and specifications.
	3.5. Glass blockwork joints are tool finished to achieve specified finish in accordance with manufacturer recommendations, standards, plans and specifications.
	3.6. Excess mortar mix is removed from glass blockwork and surfaces are cleaned in accordance with manufacturer recommendations, standards, plans and specifications.
4. Clean up.	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	4.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications

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REQUIRED SKILLS AND KNOWLEDGE

- report faults
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication, such as hand signals

- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- characteristics, applications and limitations of materials for the installation of glass blockwork
- construction terminology
- hazards associated with the installation of glass blockwork
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- processes for the calculation of material requirements
- quality requirements
- techniques for installing glass blockwork
- types, characteristics, uses and limitations of plant, tools and equipment
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum, calculate material requirements, prepare, set out and install a panel of glass blocks, at least 1.2m x 1.2m, into a masonry wall, ensuring:
  - correct identification of requirement and installation and finishing of the panel
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

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EVIDENCE GUIDE

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances

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EVIDENCE GUIDE

assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements

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RANGE STATEMENT

	pertaining to installing glass blockwork • relevant Australian standards • safe work procedures related to installing glass blockwork • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Glass blockwork may be performed on:	• a new construction site • an existing structure being renovated or extended • an existing structure subject to service restoration or maintenance.

Safety (***OHS***) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures related to this unit include emergency shutdown and stopping, extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • traffic control
	  • trip hazards
	  • underground services, including water, gas, electricity and communications
	  • work site visitors and the public
	  • working at heights
	  • working in proximity to others
	  • working with dangerous materials
	• organisational first aid
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
	• use of firefighting equipment

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RANGE STATEMENT

	• use of tools and equipment • workplace environment and safety.

Tools and equipment:	• include:
	  • bolsters
	  • brooms
	  • builders' lines
	  • concrete mixers
	  • hooked end tool (Frenchman)
	  • hammers
	  • jig saws
	  • jointing tools
	  • line blocks
	  • line pins
	  • masonry saws
	  • measuring tapes and rules
	  • mortar boards
	  • profiles
	  • rubber mallets
	  • shovels
	  • spirit levels
	  • sponges
	  • straight edges
	  • trowels
	  • wheelbarrows
	• may include:
	  • elevators
	  • forklifts
	  • materials hoists
	  • pallet trolleys
	  • scaffolds.

Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Materials include:	• glass blocks • mortar • reinforcing materials and spacers • sealants

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RANGE STATEMENT

	• waterproofing materials.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Glass blocks:	• are for ornamental rather than structural purpose • are hollow glass blocks of standard size (190mm x 190mm) • may be clear or coloured • may be laid flat or curved direct to a base or fixed into a frame for installation.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBL3009A Install flashings and damp proof course

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency specifies the outcomes required to install flashings and damp proofing products to different types and styles of buildings. It includes planning, preparation, set out, installation and application requirements of the work.

Application of the Unit

Application of the unit	This unit of competency supports achievement of skills for laying damp proof course (DPC) and flashings to moisture proof buildings and structures, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** to determine ***damp proofing applications***.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements and ***type of construction***, are checked for serviceability, and any faults are rectified or reported prior to commencement.
	1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
	1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Identify damp proofing requirement.	2.1. Type of flashing and damp proofing material are identified in accordance with job specifications, state of structure and job safety (OHS) requirements.
	2.2. Area of structure requiring damp proofing is identified from job drawings and specifications or site inspection.
	2.3. Area of structure requiring damp proofing is inspected for defects and soundness, in accordance with job and manufacturer specifications.
3. Prepare surface.	3.1. Defects are identified, corrected and made good to requirements of manufacturer specifications.
	3.2. ***Surface preparation*** of structure requiring damp proofing is carried out to manufacturer specifications.
4. Install DPC.	4.1. Damp proof is installed in accordance with work drawings and manufacturer specification.
	4.2. ***Flashing or damp proof course*** is laid and lapped in accordance with manufacturer specifications.

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ELEMENT	PERFORMANCE CRITERIA
	4.3. Damp proof material is applied with a consistent mortar bed on top and bottom.
	4.4. DPC is folded to follow shape of surrounding structures.
5. Install moisture proof barrier or flashings.	5.1. Flashing materials are ***prepared for application*** to surrounding structures in accordance with design drawings and manufacturer recommendations.
	5.2. Flashing material is laid, lapped and joined to follow shape of surrounding structure.
	5.3. Flashings or moisture barrier material is formed and sealed around openings.
	5.4. Flashing and DPC are installed to project outside of mortar joint on external surface, and outside of brickwork in accordance with manufacturer specifications.
6. Clean up.	6.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	6.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings

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REQUIRED SKILLS AND KNOWLEDGE

- report faults
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- characteristics and applications of materials for the installation of flashings and DPC
- construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- processes for the calculation of material requirements
- quality requirements
- techniques for installing flashings and DPC
- waterproofing methods
- types, characteristics, uses and limitations of plant, tools and equipment
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum, install flashings of suitable materials for the following construction situations: step flashings and/or DPC to cavity brickwork including internal and external corners, window and door heads and vertical flashings; and stepped and tray flashings to gables and/or parapets, ensuring:
    - correct identification of requirement and finishing of the tasks
    - correct selection and use of appropriate processes, tools and equipment
    - completing all work to specification.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge

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EVIDENCE GUIDE

will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the

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workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS

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RANGE STATEMENT

	• organisation work specifications and requirements • plans and specifications • regulatory and legislative requirements pertaining to installing flashings and DPC • relevant Australian standards • safe work procedures related to installing flashings and DPC • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Damp proofing applications include:	• basements • damp proof through walls • floors • wall surfaces.

Safety (***OHS***) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including emergency shutdown and stopping, extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • underground services, including water, gas, electricity and communications
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others

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RANGE STATEMENT

	• working with dangerous materials • organisational first aid • personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices • use of firefighting equipment • use of tools and equipment • workplace environment and safety.
Tools and equipment include:	• brooms • brushes • buckets • concrete mixers • electric drills • hammers (brickies, club and scutch) • hoses • knives or cutting blades • measuring tapes and rules • margin or raking tools • rollers • scaffolds • shovels • spirit levels • trowels • vacuum cleaner • wheelbarrows.
Type of construction include:	• blockwork • brickwork • reinforced in situ concrete and pre-cast concrete • stonework. •
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Damp proofing ***materials*** include:	• aluminium sheeting • bituminous sheeting • emulsions • lead and polyurethane sheeting • polyethylene sheeting.

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RANGE STATEMENT

Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Surface preparation includes:	• chipping or scraping of protrusions • cleaning free of dust.
Flashing or damp proof course includes:	• cavities • cavity gutters • lintels • roofs • windows.
Prepared for application includes:	• checking quality and blends of sand used in mortar materials • mixing • stirring • batching and mixing • cutting sheet material to length • folding materials to shape.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBL3010A Construct masonry arches

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to construct masonry arches within walls and above columns or attached piers. It includes the preparation, set out and construction of masonry walls and arches.

Application of the Unit

Application of the unit This unit of competency supports achievement of skills for laying bricks or blocks to construct arches, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** to determine the required ***brick and blocklaying tasks***.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
	1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
	1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Set out first course.	2.1. Location and line of brickwork/blockwork wall are set out on concrete footing/slab to job drawings.
	2.2. Span of ***masonry arch*** is determined from prepared allotted arch centre plus 4mm.
	2.3. Arch spans are set out to location for first course.
3. Construct wall to arch level.	3.1. Mortar mix is prepared and bricks/blocks are laid to form wall to set out.
	3.2. All work is carried out to specifications and standards.
	3.3. Gauge of abutting walls is maintained within standard tolerance at each course level.
	3.4. Plumb and alignment of vertical wall face are maintained.
	3.5. Bricks are cut.
	3.6. Bricks/blocks are laid level and to line over length of wall.
	3.7. Abutment jambs/piers are laid vertical up to

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ELEMENT	PERFORMANCE CRITERIA
	springing line.
	3.8. Bricks/blocks are laid in stretcher bond to springing line of arch with perpendicular joints maintained in vertical line.
4. Construct arch centre.	4.1. Arch centre is set out and curve is drawn up in accordance with specifications and plan.
	4.2. Plan is transferred to material and cut to shape.
5. Set up arch centre.	5.1. Height to springing line is determined and height to crown of arch is confirmed to be within standard tolerance.
	5.2. Height of toms and wedges or adjustable metal props are determined to set up and support timber arch centre.
	5.3. Supports are adjusted to ensure arch centre is level at right angles to wall face and level across springing line.
	5.4. Props, toms, packers and wedges are located for easy removal.
	5.5. Position of central key brick/block is established for gauged arch and tape used to mark gauge.
6. Cut and lay bricks/blocks to form arch.	6.1. Bricks and blocks are cut and laid on centre to form arch to specifications.
	6.2. Joints are maintained to equal size and parallel on the extrados of an arch.
	6.3. Same size wedge shape is maintained on face.
	6.4. Centreline of key brick/block wedge is maintained through vertical centre line of arch.
	6.5. Even joint thickness is maintained around extrados for cut brickwork and blockwork.
	6.6. All bricks are cut and laid to maintain even joints.
	6.7. All joints are struck evenly to depth and shape to specifications.
7. Clean up.	7.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	7.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- brick and block expansion and growth, control and articulation joints
- brick bond patterns, types of joints and finishing
- characteristics and applications of materials for masonry arch construction
- construction and arch terminology
- geometric calculations and drawing
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- processes for the calculation of material requirements
- quality requirements

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REQUIRED SKILLS AND KNOWLEDGE

- types of masonry arches and techniques of construction
- types, characteristics, uses and limitations of plant, tools and equipment
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools, plant and equipment • communicate and work effectively and safely with others • as a minimum, construct five arches to specification of which three are to be in brick and two in block, including bull's eye, segmental and Gothic with the construction of the arch centre for one of the arches.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the

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EVIDENCE GUIDE

	mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at

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EVIDENCE GUIDE

the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements pertaining to constructing masonry arches
- relevant Australian standards

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RANGE STATEMENT

	• safe work procedures related to constructing masonry arches • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Bricklaying and blocklaying tasks:	• include all clay brick (wire cut/pressed) and concrete block (hollow and solid) masonry work • may be performed on a new construction site, an existing structure being renovated or extended or an existing structure subject to service restoration or maintenance.

Safety (***OHS***) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including emergency shutdown and stopping, extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • underground services, including water, gas, electricity and communications
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	  • working with dangerous materials
	• organisational first aid
	• personal protective clothing and equipment prescribed under legislation, regulations and

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RANGE STATEMENT

	workplace policies and practices • use of firefighting equipment • use of tools and equipment • workplace environment and safety.

Tools and equipment:	• include:
	  • adjustable metal props
	  • bolsters
	  • buckets
	  • builder's squares
	  • builders' lines
	  • concrete mixers
	  • dumpy levels
	  • hammers (brickies, club and scutch)
	  • hoses
	  • jig saws
	  • jointing tools
	  • line blocks
	  • line pins
	  • mason's squares
	  • masonry saws
	  • measuring tapes and rules
	  • mortar boards
	  • packers and wedges
	  • plumb rules
	  • margin or raking tools
	  • profiles
	  • shovels
	  • spirit levels
	  • straight edges
	  • string lines
	  • timber and centre
	  • timber toms
	  • trowels
	  • wheelbarrows
	• may include:
	  • scaffolds
	  • forklifts
	  • pallet trolleys

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RANGE STATEMENT

	• brick buggies • small petrol or diesel engines, compressors or mixers.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Materials include:	• aggregates • cement and lime • clay bricks • masonry blocks • plywood • reinforcing materials • timber • waterproofing materials.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Masonry arches include:	• arch rings gauged and bonded • bull's eye and wheel • camber/square • elliptical • four centred • Gothic (equilateral, Lancet and modified) • multi-ring arches • segmental • Tudor.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBL3011A Construct curved walls

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to construct a specified masonry curved wall. It includes the preparation, set out and construction of curved walls.

Application of the Unit

Application of the unit This unit of competency supports achievement of skills for laying of bricks and blocks to construct curved walls, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** to determine the required ***bricklaying and blocklaying tasks***.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
	1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
	1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Set out curve.	2.1. Key plan curve points are plotted from job drawings and all trammel centres are established on footing slab for construction of the ***curved masonry wall***.
	2.2. Curve of wall is planned to specified location from trammel or plotted points and marked on footing slab.
3. Lay first course.	3.1. Mortar is mixed to specifications and spread evenly to the established wall location.
	3.2. Bricks/blocks are laid to planned set out for line and specified bond according to job specifications.
	3.3. Work is carried out to job specifications and standards.
4. Lay wall.	4.1. Gauge is maintained within standard tolerance at every course level.
	4.2. Vertical face alignment is maintained.
	4.3. Bricks are cut.
	4.4. Bricks/blocks are laid level over the length of the wall to the established plan profile.

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ELEMENT	PERFORMANCE CRITERIA
	4.5. Bricks/blocks are laid to specified bond with perpendicular joints (perpends) maintained in vertical line.
	4.6. Construction is completed to requirements of job drawings and specifications.
5. Finish joints.	5.1. Excess mortar is removed from brick/blockwork surfaces in accordance with manufacturer recommendations, job specifications, standards and codes.
	5.2. Joints of laid brickwork/blockwork are raked or ruled to correct profile and depth to job specifications.
	5.3. Brickwork/blockwork is brushed down prior to drying.
6. Clean up.	6.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	6.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - report faults
  - use language and concepts appropriate to cultural differences

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REQUIRED SKILLS AND KNOWLEDGE

- use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- brick and block expansion and growth, control and articulation joints
- brick bond patterns, applications to arcs and finishing
- characteristics and applications of materials for masonry curved wall construction
- circle geometric calculations - tangents, normal and arcs
- construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- processes for the calculation of material requirements
- quality requirements
- techniques of masonry curved wall construction, including radius set out
- types, characteristics, uses and limitations of plant, tools and equipment
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum, construct a curved wall using an arc centre and trammel (up to 2.4m radius), construct a 4 metre serpentine curved wall using the plotted points and template technique, ensuring:
  - correct identification of requirement and finishing of the tasks
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory

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EVIDENCE GUIDE

or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured

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EVIDENCE GUIDE

learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements

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RANGE STATEMENT

	• plans and specifications • regulatory and legislative requirements pertaining to constructing curved walls • relevant Australian standards • safe work procedures related to constructing curved walls • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Bricklaying and blocklaying tasks:	• include all clay brick (wire cut/pressed) and concrete block (hollow and solid) masonry work • may be performed on a new construction site, an existing structure being renovated or extended or an existing structure subject to service restoration or maintenance.

Safety (***OHS***) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including emergency shutdown and stopping, extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • underground services, including water, gas, electricity and communications
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others

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RANGE STATEMENT

	• working with dangerous materials • organisational first aid • personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices • use of firefighting equipment • use of tools and equipment • workplace environment and safety.
Tools and equipment:	• include: • bolsters • buckets • builder's squares • builders' lines • concrete mixers • curve templates • dumpy levels • hammers (brickies, club and scutch) • hoses • jointing tools • line blocks • line pins • mason's squares • masonry saws • measuring tapes and rules • mortar boards • plumb rules • margin or raking tools • profiles • shovels • spirit levels • straight edges • string lines • trammel heads • trowels • wheelbarrows • may include: • brick buggies • elevators

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RANGE STATEMENT

	• forklifts • pallet trolleys • scaffolds • small petrol or diesel engines, compressors or mixers.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Materials include:	• aggregates • cement • clay bricks • lime • masonry blocks • reinforcing materials • waterproofing materials.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Curved masonry wall includes:	• arc centre and trammel • plotted points and templates.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCBL3012A Construct fireplaces and chimneys

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to construct brick fireplaces and chimneys in various types and styles of buildings. It includes planning, preparation, set out and construction requirements of the work.

Application of the Unit

Application of the unit

This unit of competency supports achievement of skills for laying of bricks to construct fireplaces and chimneys, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** to determine the required ***bricklaying and blocklaying tasks***.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
	1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
	1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Set out and prepare base.	2.1. Set out area is correctly located and footing is checked for conformity to dimensions and location as per job drawings and specifications for ***fireplaces and chimneys***.
	2.2. Fireplace base is set out to correct measurements and location to job drawings.
3. Construct base.	3.1. Mortar mix is prepared and checked for conformity to specifications and standards.
	3.2. Bricks, blocks and stone are laid to set out for base in accordance with specifications and standards.
	3.3. Bricks and stone laid to line and level and constructed in accordance with specifications and standards.
4. Construct hearth and firebox.	4.1. Damp proof courses are installed to specifications and in accordance with standards.
	4.2. Bricks, blocks and stone are laid to form hearth to designed shape, pattern, job drawings and specifications.

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ELEMENT	PERFORMANCE CRITERIA
5. Construct firebox and face brickwork.	5.1. Specified materials for firebox and face brickwork are selected to specifications. 5.2. Firebox is constructed to form shape for rear and side walls to specifications. 5.3. Face brickwork is laid to form shape of openings to designed dimensions and finish of drawings and specifications. 5.4. Lintel is installed to specifications. 5.5. Facework is laid to bond, pattern and colour finish to wall and aligned to specification. 5.6. Protrusions and mantelpiece are formed and finished to designed shape and specifications. 5.7. Plumb and level are maintained for straight work.
6. Form throat and chimney shaft.	6.1. Work platform is erected in accordance with regulatory authorities' and workplace requirements. 6.2. Throat is formed, parged and shaped for firebox and chimney design and specifications, and constructed in accordance with specifications and standards. 6.3. Parging to flue is completed to specifications. 6.4. Brick and stone are laid to build outer skin and form chimney shaft to specifications and are constructed in accordance with specifications and standards. 6.5. Baffles are built in, where designed, to location and specifications.
7. Complete chimney.	7.1. Chimney tray is built in to chimney design and installed to specification in accordance with standards. 7.2. Chimney is constructed in accordance with specifications and standards. 7.3. Head of chimney is completed to designed finish in accordance with drawings and specifications.
8. Finish joints.	8.1. Joints to laid brickwork, blockwork and stonework are raked or ruled to designed depth in accordance with the job specifications. 8.2. Joints to laid brickwork, blockwork and stonework are raked out for provision of apron and stepped flashing at roof line. 8.3. Brickwork, blockwork and stonework are brushed down prior to drying, using appropriate brushing tool.
9. Clean up.	9.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation,

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ELEMENT	PERFORMANCE CRITERIA
	regulations, codes of practice and job specification. 9.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- brick expansion and growth, control and articulation joints
- characteristics and applications of materials for constructing fireplaces and

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REQUIRED SKILLS AND KNOWLEDGE

chimneys
- construction terminology
- flashing
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- principles of heat, fire and drawing of smoke
- processes for the calculation of material requirements
- quality requirements
- techniques for constructing fireplaces and chimneys
- types, characteristics, uses and limitations of plant, tools and equipment
- workplace and equipment safety requirements.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools, plant and equipment

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EVIDENCE GUIDE

- communicate and work effectively and safely with others
- as a minimum, given the plans and specifications, calculate the materials required and construct a brick fireplace and chimney, ensuring:
  - correct identification of requirement and finishing of the tasks
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of

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EVIDENCE GUIDE

the Construction, Plumbing and Services Training Package

- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

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Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements pertaining to constructing fireplaces and chimneys
- relevant Australian standards
- safe work procedures related to constructing fireplaces and chimneys
- signage
- verbal or written and graphical instructions
- work bulletins
- work schedules.

Bricklaying and blocklaying tasks:

- include all clay brick (wire cut/pressed) and concrete block (hollow and solid) masonry work
- may be performed on a new construction site, an existing structure being renovated or extended or an existing structure subject to service restoration or maintenance.

Safety (***OHS***) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:

- emergency procedures, including emergency shutdown and stopping, extinguishing fires, organisational first aid requirements and evacuation
- handling of materials
- hazard control
- hazardous materials and substances

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RANGE STATEMENT

	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • underground services, including water, gas, electricity and communications
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	  • working with dangerous materials
	• organisational first aid
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environment and safety.

Tools and equipment:	• include:
	  • bolsters
	  • brick grabs
	  • brooms
	  • buckets
	  • builders' lines
	  • cement mixers
	  • elevators
	  • hammers (brickies, club and scutch)
	  • hoses
	  • jig saws
	  • line blocks
	  • line pins
	  • masonry saws

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RANGE STATEMENT

	• measuring tapes and rules • mortar boards • margin or raking tools • profiles • shovels • spirit levels • straight edges • trowels • wheelbarrows • may include: • elevators • scaffolds • materials hoists • forklifts • pallet trolleys • brick buggies • small petrol or diesel engines or compressors.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • where specified • workplace operations and procedures.
Materials:	• are to include: • aggregates • cement • clay bricks (wire cut or pressed) • fire-rated masonry blocks • lime • refractory bricks • may be stone.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.

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RANGE STATEMENT

Fireplaces and chimneys include:	• brick and block veneer • solid brick, block and stone wall structured buildings.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBL3013A Construct masonry structural systems

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to construct masonry load bearing walls and engaged and isolated piers. It includes planning, preparation set out and construction requirements of the work.

Application of the Unit

Application of the unit This unit of competency supports achievement of skills for laying bricks or blocks to a specified bond to construct load bearing building structures of a designed structural stability, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** to determine the required ***bricklaying and blocklaying tasks***.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
	1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
	1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Set out masonry structures.	2.1. Location and structural details of masonry structures are determined from plans and specifications.
	2.2. Work platform is erected in accordance with regulatory and workplace requirements.
	2.3. Set out area is correctly located and footing is checked for conformity to dimensions and location as per job specifications.
	2.4. ***Masonry structure*** is set out from drawings and specifications.
	2.5. Mortar materials are prepared and mixed in accordance with specifications.
3. Construct load bearing walls.	3.1. Masonry ***load bearing wall*** structure is laid to set out for base and specified bond in accordance with specifications.
	3.2. ***Structural masonry*** wall is constructed maintaining bond, and is completed to job specifications.
	3.3. Walls are to be straight, plumb and level within standard tolerances.

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ELEMENT	PERFORMANCE CRITERIA
	3.4. Tie down and lateral support system structures are installed to walls in accordance with plans, specifications, codes and standards.
4. Construct load bearing walls with piers.	4.1. Masonry blockwork is laid to set out on reinforced concrete footing slab and to specified bond.
	4.2. Masonry blockwork gauge is determined and set out rod is prepared to gauge dimensions in accordance with specifications.
	4.3. Masonry blocks are cut to work bond and control joints.
	4.4. Columns are formed using walls and attached/engaged ***piers***, incorporating and maintaining bond and perpendicular intersections of both vertical surfaces.
	4.5. Reinforcement material is placed and secured to form tie down, bracing and vertical supports for roof structures.
	4.6. Cores and blocks are cleaned out in preparation for the installation of formwork for concrete core filling in accordance with manufacturer recommendations and specifications.
	4.7. Concrete grout is mixed, placed and compacted to hollow blocks in accordance with manufacturer recommendations and specifications.
	4.8. Completed wall is to be straight, plumb and level within standard tolerances.
5. Carry out articulated masonry construction.	5.1. Design principles and methods of construction using ***articulation joints*** are identified.
	5.2. Locations of articulation joints are identified from work drawings specifications.
	5.3. Type of articulation method is identified and applied in accordance with work drawings, manufacturer recommendations and specifications.
6. Clean and finish mortar joints.	6.1. Joints to laid face brickwork are raked or ruled to correct profile and depth in accordance with job specifications.
	6.2. Blockwork is brushed down prior to drying.
7. Clean up.	7.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	7.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with

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ELEMENT	PERFORMANCE CRITERIA
	manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- articulated and pier construction
- bonding patterns and block bonding techniques
- brick expansion and growth
- characteristics and applications of materials for constructing masonry structural systems

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REQUIRED SKILLS AND KNOWLEDGE

- construction terminology
- control joints
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- processes for the calculation of material requirements
- quality requirements for masonry structural systems
- reinforcing of structures and core filling of blockwork
- techniques for constructing masonry structural systems
- types, characteristics, uses and limitations of plant, tools and equipment
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum, given the plans and specifications, construct a block wall, including:
    - confirming that starter bars are correctly positioned
    - reinforcing with horizontal and vertical steel
    - cleaning eyes and tie downs
    - cleaning cores (for installation of formwork and pouring of concrete)
    - mixing, placing and compacting concrete grout
    - finishing wall to specifications
    - a load bearing column (390mm x 390mm) of a minimum of 1m high, including a control joint and a service opening for a door jamb with a bond beam lintel
    - and ensuring:

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EVIDENCE GUIDE

- correct identification of requirement and finishing of the tasks
- correct selection and use of appropriate processes, tools and equipment
- completing all work to specification.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application

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EVIDENCE GUIDE

- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

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RANGE STATEMENT

Information includes:	• diagrams or sketches • instructions issued by authorised organisational or external personnel • manufacturer specifications and instructions where specified • memos • MSDS • organisation work specifications and requirements • plans and specifications • regulatory and legislative requirements pertaining to constructing masonry structural systems • relevant Australian standards • safe work procedures related to constructing masonry structural systems • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Bricklaying and blocklaying tasks:	• include all clay brick (wire cut/pressed) and concrete block (hollow and solid) masonry work • may be performed on a new construction site, an existing structure being renovated or extended or an existing structure subject to service restoration or maintenance.

Safety (***OHS***) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including emergency shutdown and stopping, extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers

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RANGE STATEMENT

- surrounding structures
- traffic control
- trip hazards
- underground services, including water, gas, electricity and communications
- work site visitors and the public
- working at heights
- working in confined spaces
- working in proximity to others
- working with dangerous materials

- organisational first aid
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- use of firefighting equipment
- use of tools and equipment
- workplace environment and safety.

Tools and equipment include:

- include:
  - bolsters
  - bolt cutters
  - brick grabs
  - brooms
  - buckets
  - builders' lines
  - concrete mixers
  - dumpy levels
  - elevators
  - explosive power tools
  - hammers (brickies, club and scutch)
  - hoses
  - jig saws
  - line blocks
  - line pins
  - masonry saws
  - measuring tapes and rules
  - mortar boards
  - pincers
  - plumb rule
  - margin or raking tools

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RANGE STATEMENT

	• profiles • shovels • spirit levels • steel tying tools • straight edges • string line • trowels • wheelbarrows • may include: • brick buggies • elevators • forklifts • materials hoists • pallet trolleys • scaffolds • small petrol or diesel engines, compressors or mixers.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Materials include:	• aggregates • cement • clay bricks (wire cut or pressed) • lime • masonry blocks • non-shrink grout • sealants • steel reinforcing materials • steel ties • waterproofing materials.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Masonry structure includes:	• articulated masonry joints

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RANGE STATEMENT

	• retaining walls • walls, columns and surrounds of service openings.
Load bearing walls include:	• reinforced masonry retaining walls • walls directly supporting roof • walls/bracing walls for wind loads.
Structural masonry includes:	• lateral support systems and reinforcement • specified wall ties.
Piers include:	• column at a control joint • corner column • end of wall column • straight wall column.
Articulation joints include:	• combined flexible panel and control joint • compressed foam filler rods • compressed foam joint filler • compressed foam joint strips • flexible panel • full height control joint.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBL3014A Install fire-rated masonry construction

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to construct fire-rated masonry construction systems for fire-resistant construction. It includes planning, set out and installation requirements of the work.

Application of the Unit

Application of the unit This unit of competency supports achievement of skills for laying fire-resistant masonry to buildings, walls and service openings through the fire resistance level (FRL) range of 30/30/30 to 240/240/240, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** to determine the required ***bricklaying and blocklaying tasks***.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
	1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
	1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Prepare for construction.	2.1. FRL is established, and type of ***fire-resistant construction*** and material requirements are determined from job plans and design specifications.
	2.2. Location and composition of wall structure are identified from job plans and specifications.
	2.3. Mortar mix is prepared and checked for conformity to specifications and standards.
	2.4. Work platform is erected in accordance with regulatory authorities' requirements.
3. Construct masonry wall systems.	3.1. Fire-resistant wall types are identified as satisfying FRL for integrity and insulation.
	3.2. Masonry wall is constructed using specified bricks/blocks laid to specification to satisfy FRL for design specifications, codes and structural adequacy in accordance with standards.
4. Finish joints and junctions.	4.1. Fire seal is installed in accordance with manufacturer specifications to form a continuous fire block between separating wall structure and roof covering.

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ELEMENT	PERFORMANCE CRITERIA
	4.2. Service penetrations are installed to specifications to maintain integrity of design.
	4.3. Excess mortar is removed from brick/blockwork surfaces and cavities are cleaned free of mortar and debris in accordance with job specifications and standards.
5. Clean up.	5.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	5.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:

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REQUIRED SKILLS AND KNOWLEDGE

- use a range of mobile technology, such as two-way radio and mobile phones
- voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- brick expansion and growth, control and articulation joints
- characteristics and applications of materials for installing fire-rated masonry
- construction terminology
- fire rating of buildings
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- principles of heat and effects on materials
- processes for the calculation of material requirements
- quality requirements for fire-rated masonry construction
- techniques for installing fire-rated masonry
- types, characteristics, uses and limitations of plant, tools and equipment
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum, construct a fire-resistant masonry wall of sufficient dimension to incorporate a fire-rated steel door jamb and service penetration, including the installation of appropriate fire-rated insulation between the wall and roof covering and fire seal strip between the structure and the cladding, ensuring:
  - correct identification of requirement and finishing of the structure
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge

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EVIDENCE GUIDE

will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the

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EVIDENCE GUIDE

workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS

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RANGE STATEMENT

	• organisation work specifications and requirements • plans and specifications • regulatory and legislative requirements pertaining to installing fire-rated masonry construction • relevant Australian standards • safe work procedures related to installing fire-rated masonry construction • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Bricklaying and blocklaying tasks:	• include all clay brick (wire cut/pressed) and concrete block (hollow and solid) masonry work • may be performed on a new construction site, an existing structure being renovated or extended or an existing structure subject to service restoration or maintenance.

Safety (***OHS***) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including emergency shutdown and stopping, extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • underground services, including water, gas, electricity and communications
	  • work site visitors and the public

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RANGE STATEMENT

- working at heights
- working in confined spaces
- working in proximity to others
- working with dangerous materials
- organisational first aid
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- use of firefighting equipment
- use of tools and equipment
- workplace environment and safety.

Tools and equipment include:

- include:
  - bolsters
  - brooms
  - buckets
  - builders' lines
  - concrete mixers
  - hammers (brickies, club and scutch)
  - hoses
  - line blocks
  - line pins
  - masonry saws
  - measuring tapes and rules
  - mortar boards
  - profiles
  - shovels
  - spirit levels
  - straight edges
  - trowels
  - wheelbarrows
- may include:
  - brick buggies
  - elevators
  - forklifts
  - materials hoists
  - pallet trolleys
  - scaffolds
  - small petrol or diesel engines or compressors.

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RANGE STATEMENT

Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Materials include:	• fire-resistant masonry blocks • fire seals and insulation (rockwools and sealing strips) • mortar.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Fire-resistant construction includes:	• ceilings • concrete walls • masonry walls • timber and steel framing.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBL3015A Construct decorative brickwork

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to construct decorative brickwork to buildings. It includes planning, set out and laying of bricks to form a decorative finish.

Application of the Unit

Application of the unit This unit of competency supports achievement of skills for laying bricks to form decorative patterns or features in brickwork, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** to determine the required ***bricklaying and blocklaying tasks***.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
	1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
	1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Set out for decorative brickwork.	2.1. Location and structural feature details of ***decorative brickwork*** are determined from drawings and specifications.
	2.2. Brickwork is set out according to location and dimensions from drawings and specifications.
	2.3. Mortar is mixed to specifications.
3. Lay bricks to form corbels and protrusions.	3.1. Corbelling design is checked from specifications to ensure overhang design is in accordance with job drawings and specifications.
	3.2. Bricks are laid to maintain bond and level alignment to form corbels to design and specifications.
	3.3. Bricks are laid to form featured protrusions in accordance with job drawings and specifications.
4. Construct brickwork to acute and obtuse angled corners.	4.1. Junction at corners is determined in accordance with specifications.
	4.2. Standard bricks are laid to line and level to form dogtooth and mitre junctions in accordance with specifications.

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ELEMENT	PERFORMANCE CRITERIA
	4.3. Squints and standard bricks are laid to line and level to form designed flush junctions in accordance with specifications.
	4.4. Bond and gauge are maintained to specification.
5. Lay plinth bricks or squints to form plinth areas or sills.	5.1. Plinth bricks are laid to level and alignment to form protruding plinth in accordance with specifications.
	5.2. Plinth bricks or squints are laid to sill locations to form feature finish to level and alignment in accordance with specifications.
6. Install decorative capping.	6.1. Bricks are cut and laid on edge mitre coping to 90° corner.
	6.2. Bricks are cut and laid on edge mitre coping to 135° corner.
7. Construct decorative panel.	7.1. Area for set out is located, and is checked for plumb, level and to be clean and dry in accordance with manufacturer specifications.
	7.2. Panel is set out to plan and specifications.
	7.3. Whole bricks are laid to conform to the set out.
	7.4. Starting edges and feather edges are cut and laid to conform to set out.
8. Finish joints.	8.1. Brickwork joints in laid brickwork are raked or ruled to correct depth in accordance with job specification.
	8.2. Brickwork is brushed down prior to drying using appropriate brushing tool in accordance with job specifications.
9. Clean up.	9.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	9.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

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REQUIRED SKILLS AND KNOWLEDGE

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- construction terminology
- decorative brickwork materials
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- processes for the calculation of material requirements
- quality requirements for decorative brickwork
- techniques for constructing decorative brickwork
- types, characteristics, uses and limitations of plant, tools and equipment
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum, construct a wall of 3 course corbel to decorative features; construct a 90° and a 135° corner using squints, dog toothing and mitre to a minimum of 600mm high; cut and lay brick on edge coping to 90° and 135° corner; using standard bricks, squints and plinths, lay return corner sills to 90° and 135° corners and construct a herring bone panel of 900 x 1200mm, ensuring:
  - correct identification of requirement and finishing of the tasks
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

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EVIDENCE GUIDE

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role

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EVIDENCE GUIDE

and the practical requirements of the workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos

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RANGE STATEMENT

	• MSDS • organisation work specifications and requirements • plans and specifications • regulatory and legislative requirements pertaining to constructing decorative brickwork • relevant Australian standards • safe work procedures related to constructing decorative brickwork • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Bricklaying and blocklaying tasks:	• include all clay brick (wire cut/pressed) and concrete block (hollow and solid) masonry work • may be performed on a new construction site, an existing structure being renovated or extended or an existing structure subject to service restoration or maintenance.

Safety (***OHS***) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including emergency shutdown and stopping, extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • underground services, including water, gas, electricity and communications

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RANGE STATEMENT

- work site visitors and the public
- working at heights
- working in confined spaces
- working in proximity to others
- working with dangerous materials
- organisational first aid
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- use of firefighting equipment
- use of tools and equipment
- workplace environment and safety.

Tools and equipment:

- include:
  - bolsters
  - brick grabs
  - brooms
  - builders' lines
  - concrete mixers
  - elevators
  - hammers (brickies, club and scutch)
  - hoses
  - jig saws
  - jointing tools
  - line blocks
  - line pins
  - masonry saws
  - measuring tapes and rules
  - mortar boards
  - margin or raking tools
  - profiles
  - shovels
  - spirit levels
  - straight edges
  - trowels
  - wheelbarrows
- may include:
  - brick buggies
  - forklifts

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RANGE STATEMENT

	• materials hoists • pallet trolleys • scaffolds.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Materials include:	• aggregates • cement • clay bricks • lime • masonry blocks • reinforcing materials • sealants • timber and plyboard • waterproofing materials.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Decorative brickwork includes:	• angles • corbelling • irregular corner junctions (special bricks, plinth and sill finishes) • panelling • protrusions.

Unit Sector(s)

Unit sector Construction

Co-requisite units

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Co-requisite units Nil

Functional area

Functional area

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CPCCBL3016A Construct battered masonry walls and piers

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to construct battered and piered masonry walls. It includes the preparation of the base and the laying of masonry or stone to form the wall.

Application of the Unit

Application of the unit This unit of competency supports achievement of skills for construction of a battered wall and a battered pier, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information***.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
	1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
	1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Prepare base.	2.1. Angle of batter is identified from plans or specifications.
	2.2. Profile is set up as specified.
	2.3. First course of ***bricks or blocks*** is cut and laid to suit the angle of ***battered wall***.
3. Lay masonry.	3.1. Mortar materials are proportioned and mixed to specifications.
	3.2. Layout of masonry or stone is determined and set out in accordance with plans and specifications.
	3.3. Wall ends are located and constructed using battered rod, board and battering level.
	3.4. Corners are constructed or profile template is used to establish the batter angle.
	3.5. Stone is laid into place to pattern, bond and surface alignment according to specifications.
	3.6. ***Mortar joints*** are struck or raked in accordance with specifications.
4. Clean up.	4.1. Work area is cleared and materials disposed of,

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ELEMENT	PERFORMANCE CRITERIA
	reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	4.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- characteristics and applications of materials for constructing battered walls and

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REQUIRED SKILLS AND KNOWLEDGE

piers

- construction terminology
- control and articulation joints
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- processes for the calculation of material requirements
- quality requirements for battered masonry walls and piers
- techniques for constructing battered walls
- types, characteristics, uses and limitations of plant, tools and equipment
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum, construct a brick battered wall, 1m high and 1m long; and construct a battered pier of 1.2m length, 470mm width and 1.2m high, at 90 degrees to an existing or constructed plumb wall, ensuring:
  - correct identification of requirement and finishing of the tasks
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory

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EVIDENCE GUIDE

or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured

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EVIDENCE GUIDE

learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements

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RANGE STATEMENT

	• plans and specifications • regulatory and legislative requirements pertaining to constructing mattered masonry walls and piers • relevant Australian standards • safe work procedures related to constructing mattered masonry walls and piers • signage • verbal or written and graphical instructions • work bulletins • work schedules.

Safety (***OHS***) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including emergency shutdown and stopping, extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • underground services, including water, gas, electricity and communications
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	  • working with dangerous materials
	• organisational first aid
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
	• use of firefighting equipment

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RANGE STATEMENT

	• use of tools and equipment • workplace environment and safety.

Tools and equipment:	• includes:
	  • bolsters
	  • brooms
	  • buckets
	  • builders' lines
	  • concrete mixers
	  • hammers (brickies, club and scutch)
	  • hoses
	  • jig saws
	  • line blocks
	  • line pins
	  • masonry saws
	  • measuring tapes and rules
	  • mortar boards
	  • margin or raking tools
	  • shovels
	  • spirit levels
	  • straight edges
	  • trowels
	  • wheelbarrows
	• may include:
	  • brick buggies
	  • elevators
	  • forklifts
	  • materials hoists
	  • pallet trolleys
	  • profiles
	  • scaffolds.

Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Materials include:	• aggregates • cement • clay bricks • lime

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RANGE STATEMENT

	• masonry blocks • reinforcing materials • timber (for batter board) • waterproofing materials.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Bricks or blocks:	• include clay brick (wire cut/pressed) and concrete block (hollow and solid) masonry work and battered walls and piers • may be constructed on a new construction site, an existing structure being renovated or extended or an existing structure subject to service restoration or maintenance.
Battered wall may be constructed of:	• block • brick • stone.
Mortar joints may be:	• brush sanded • dry • mortar.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

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Functional area

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CPCCBL3017A Carry out tuck pointing to brickwork

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to apply tuck pointing to brickwork to different types and styles of buildings. It includes planning, preparation, set out and application of tuck pointing.

Application of the Unit

Application of the unit

This unit of competency supports achievement of skills in applying a decorative finish to masonry brickwork by tuck pointing. Tuck pointing has particular application in heritage and restoration work, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained using suitable ***information*** sources, confirmed and applied for ***restoration of brickwork structures***.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
	1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
	1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Prepare work location.	2.1. Materials and existing brickwork, including ***type of bonds***, are checked for consideration of colour wash, and composition of mortar stopping mix and mixing putty for beading.
	2.2. Work platform is erected in accordance with regulatory authorities' requirements.
	2.3. Work area and surrounds are isolated by use of barricades and signage or fall protection in accordance with regulatory and job requirements.
	2.4. Loose or broken bricks are removed and reinstalled individually and mortar is removed from joints in brickwork by raking out mortar to specified depth.
	2.5. Surface of work area is cleaned and prepared for application.
	2.6. Surface of work area is colour washed consistent with brick colour.
	2.7. Position of bed and cross joints is determined, measured and struck with chalk line.

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ELEMENT	PERFORMANCE CRITERIA
	2.8. ***Mortar*** is prepared to determined composition, colour and mix for stopping application to brickwork.
	2.9. Mortar stopping mix is applied to ensure joints are full and brickwork is re-pointed to meet job requirements.
	2.10. Jointer tool is used to form an indent key to receive putty point.
3. Apply putty point material to bed joints.	3.1. Materials are identified, selected and prepared to determined composition and consistency used for pointing or beading putty in accordance with job requirements.
	3.2. Pointing putty is applied with the use of jointer tool to fill indent and form joints.
	3.3. Surplus pointing putty present on horizontal and vertical joints is removed with the aid of a Frenchman tool to form finite shape and edges to tuck pointing.
	3.4. Tuck pointed work area is completed, allowed to dry and any imperfections gently removed and lightly brushed clean.
4. Clean up.	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	4.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand

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REQUIRED SKILLS AND KNOWLEDGE

- follow instructions
- read and interpret:
  - documentation from a variety of sources
  - drawings and specifications
- report faults
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- brick expansion, growth and control joints
- characteristics and applications of materials for tuck pointing of brickwork
- construction terminology
- finishing of brick joints
- heritage brickwork materials and bonding techniques
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- quality requirements for tuck pointing to brickwork
- techniques for tuck pointing of brickwork
- types, characteristics, uses and limitations of plant, tools and equipment
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum, tuck point a new or existing area of brickwork of at least 1 square metre, ensuring:
  - correct identification of requirement and finishing of the task
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

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EVIDENCE GUIDE

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances

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assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements

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RANGE STATEMENT

	pertaining to carrying out tuck pointing to brickwork • relevant Australian standards • safe work procedures related to carrying out tuck pointing to brickwork • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Restoration of brickwork structures varies according to factors that include:	• types and composition of mortar • types of bonding • types of bricks (length and width, height, types of clay, colour and surface finish).

Safety (***OHS***) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including emergency shutdown and stopping, extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • underground services, including water, gas, electricity and communications
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	  • working with dangerous materials
	• organisational first aid
	• personal protective clothing and equipment prescribed under legislation, regulations and

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RANGE STATEMENT

	workplace policies and practices • use of firefighting equipment • use of tools and equipment • workplace environment and safety.

Tools and equipment:	• includes:
	  • brushes
	  • buckets
	  • float
	  • hooked end tool (Frenchman)
	  • gauging equipment
	  • hammers (brickies, club and scutch)
	  • hawks
	  • jointer tools
	  • line blocks
	  • line pins
	  • measuring tapes and rules
	  • plugging chisels
	  • margin or raking tools
	  • pointing trowels
	  • profiles
	  • scaffolds
	  • sieve
	  • spirit levels
	  • sponges
	  • squares
	  • straight bevelled edges
	  • straight edges
	  • string lines
	• may include:
	  • concrete mixers
	  • small petrol or diesel engines, compressors or mixers
	  • wheelbarrows.

Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Materials include:	• colouring agents and pigments

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RANGE STATEMENT

	• mortar • slaked rock lime.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Type of bonds include:	• colonial • Dutch • English • English cross • Flemish • header • stretcher.
Mortar will vary in accordance with:	• its compatibility with the composition of each type of brick • particular adhesive ability, stability and durability.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCBL3018A Install aerated autoclaved concrete products

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to install aerated autoclaved concrete (AAC) products to different types and styles of buildings. It includes planning, preparation, set out and installation requirements of the work.

Application of the Unit

Application of the unit

This unit of competency supports achievement of skills for laying AAC blockwork, lintels, floor panels and wall panels to buildings or structures, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** to determine the ***installation of AAC products***.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
	1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
	1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
	1.8.
2. Set out and prepare base.	2.1. Location of blockwork is set out in mortar to position in accordance with job drawings, including any damp course.
	2.2. Base location is prepared so that surface is dry, horizontal, clean and flat to specifications.
	2.3. Work is platform erected in accordance with job and regulatory authorities' requirements.
	2.4.
3. Lay AAC blockwork.	3.1. Adhesive is prepared to conform to consistency and preparation in accordance with requirements and manufacturer recommendations.
	3.2. Adhesive is applied to ***AAC blocks*** to maintain full joints at specified thickness in accordance with manufacturer specifications.
	3.3. AAC block is laid in running bond and set out to application and requirements for line, level and plumb in construction projects in accordance with

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ELEMENT	PERFORMANCE CRITERIA
	job plans and specifications.
	3.4. Blocks are cut to correct length at end of course in accordance with manufacturer recommendations and specifications.
	3.5. Blockwork is completed to specification requirements, with surplus adhesive from joints removed.
	3.6. Service installations are chased into blockwork to depth and position according to manufacturer recommendations and specifications.
	3.7. Tension and control ***fixings***, ***ties and brackets*** are installed across joints or between internal and external wall components in accordance with manufacturer recommendations and specifications, for wall stability.
	3.8.
4. Install lintels to AAC blockwork.	4.1. Blockwork is prepared to receive manufactured lintels in accordance with plans and manufacturer specifications.
	4.2. Mortar bed is prepared to facilitate lintel and maintain to level position in accordance with plans and manufacturer specifications.
	4.3. Lintels are lifted into position manually or with mechanical assistance in accordance with workplace requirements.
	4.4.
5. Install AAC floor panels.	5.1. Floor supports are prepared and finished to a level, even surface to receive manufactured floor panels in accordance with manufacturer specifications.
	5.2. AAC floor panels are checked for conformity of span, size, fix and load design in accordance with design specifications.
	5.3. AAC floor panels are installed to specified location, and reinforcement bars and grout are installed to form a ring anchor system in accordance with manufacturer specifications.
	5.4. Excess adhesive is removed from work surface and cleaned free of debris in accordance with manufacturer recommendations and job specifications.
	5.5.
6. Install AAC wall	6.1. Location and surrounds of installation are checked

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ELEMENT	PERFORMANCE CRITERIA
panels.	for conformity to dimensions and design specifications. 6.2. Wall panels are checked for conformity to dimension and in accordance with design specifications. 6.3. AAC wall panels are installed vertically for load bearing applications in accordance with manufacturer recommendations and engineer's design specifications or horizontally for cladding purposes. 6.4. Control joints are installed in accordance with manufacturer recommendations. 6.5. Excess adhesive is removed from work surface and cleaned free of debris in accordance with manufacturer recommendations and job specifications. 6.6.
7. Clean up.	7.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 7.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices. 7.3.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:

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REQUIRED SKILLS AND KNOWLEDGE

  - documentation from a variety of sources
  - plans, specifications and drawings
- report faults
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- characteristics and applications of AAC products and materials
- construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- mechanical lifting
- plans, specifications and drawings
- processes for the calculation of material requirements
- quality requirements of AAC products
- techniques for installing AAC products
- types, characteristics, uses and limitations of plant, tools and equipment
- workplace and equipment safety requirements.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace

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EVIDENCE GUIDE

	environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to:
	• locate, interpret and apply relevant information, standards and specifications
	• comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
	• comply with organisational policies and procedures, including quality requirements
	• safely and effectively use tools, plant and equipment
	• communicate and work effectively and safely with others
	• as a minimum, given plans and specifications, construct an AAC block and panel building section to include damp proof course; a base laid in mortar; walls of AAC blocks laid in running bond using adhesive, incorporating an opening and a lintel; and a floor and wall of AAC panels (including reinforcement), ensuring:
	  • correct identification of requirement and finishing of the structure
	  • correct selection and use of appropriate processes, tools and equipment
	  • completing all work to specification.

Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe

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work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and

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EVIDENCE GUIDE

numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements pertaining to installing AAC products
- relevant Australian standards
- safe work procedures related to installing AAC products
- signage
- verbal or written and graphical instructions
- work bulletins
- work schedules.

Installation of AAC products may be performed on:

- a new construction site
- an existing structure being renovated or extended
- an existing structure subject to service

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RANGE STATEMENT

	restoration or maintenance.

Safety (***OHS***) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including emergency shutdown and stopping, extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • underground services, including water, gas, electricity and communications
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	  • working with dangerous materials
	• organisational first aid
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environment and safety.

Tools and equipment:	• include:
	  • AAC adhesive trowels
	  • adhesive drills
	  • band saws
	  • bolsters
	  • brooms
	  • buckets

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RANGE STATEMENT

- builders' lines
- caulking guns
- concrete mixers
- dust masks and respirators
- hammers (brickies, club and scutch)
- hand saws
- hoses
- line blocks
- line pins
- masonry saws
- measuring tapes and rules
- mortar boards
- profiles
- shovels
- spirit levels
- straight edges
- wheelbarrows

- may include:
  - elevators
  - forklifts
  - materials hoists
  - mechanical lifting equipment
  - pallet trolleys
  - planks
  - scaffolds
  - small petrol or diesel engines or compressors.

Quality requirements include relevant regulations, including:

- Australian standards
- internal company quality policy and standards
- manufacturer specifications, where specified
- workplace operations and procedures.

Materials include:

- AAC products
- adhesives
- mortar.

Environmental requirements include:

- clean-up protection
- noise and dust
- vibration
- waste management.

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RANGE STATEMENT

Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
AAC blocks include:	• reinforced AAC products (steel mesh, panels, lintels and treads in a range of strength and grades) • unreinforced AAC products (blocks).
Fixing ties and brackets include:	• angle brackets • control joint ties • flat junction brackets • joist hanger support brackets • sliding joint ties • tension ties • wall ties.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCCA2002B Use carpentry tools and equipment

Modification History

Minor editorial corrections, including:

- removing reference to drawing requirements
- reformatting and rewording some critical aspects (intent unchanged) to enhance clarity

Equivalent to CPCCCA2002A

Unit Descriptor

This unit of competency specifies the outcomes required to safely select and use carpentry tools and equipment. It includes hand tools, power tools, pneumatic tools, plant and equipment.

Application of the Unit

This unit of competency supports achievement of skills in identification, correct and safe use and maintenance of hand and power tools commonly used in the construction industry.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions and operational details are obtained, confirmed and applied from relevant ***information*** to undertake ***planning and preparation***.
		1.2	***Safety (OHS)*** requirements are followed in accordance with safety plans and policies.
		1.3	Signage and barricade requirements are identified and implemented.
		1.4	***Plant and equipment,*** is selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
		1.5	Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
		1.6	***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
		1.7	***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2	Identify and select hand, power and pneumatic tools.	2.1	***Hand, power and pneumatic tools,*** their functions, operations and limitations are identified and selected.
		2.2	OHS requirements for using hand, power and pneumatic tools are recognised and adhered to.

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		2.3	Lubricants, hydraulic fluid and water are checked according to manufacturer recommendations.
3	Use tools.	3.1	Hand tools used are appropriate to the task and materials and are in accordance with OHS requirements.
		3.2	Power and pneumatic tools are safely and effectively used in accordance with manufacturer recommendations and state or territory OHS requirements.
		3.3	Tools are sharpened and maintained according to manufacturer recommendations.
4	Identify, select and use plant and equipment.	4.1	Plant and equipment are selected and used consistent with OHS requirements and the needs of the job.
		4.2	Lubricants, hydraulic fluid and water are checked according to manufacturer recommendations.
		4.3	Plant and equipment are maintained in accordance with manufacturer recommendations and standard work practices.
5	Clean up.	5.1	Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
		5.2	Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- planning and organising skills to prepare for work tasks
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- carpentry materials
- carpentry tool use techniques
- construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- processes for the calculation of material requirements
- quality requirements of carpentry tools and equipment

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- relevant Acts, regulations and codes of practice
- tools and equipment safety manuals and instructions
- types, characteristics, uses and limitations of plant, tools and equipment
- workplace and equipment safety requirements.
-
-

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools, plant and equipment • communicate and work effectively and safely with others • identify and select hand tools for given tasks • safely use and maintain a minimum of rules, tapes, squares, hammers, hand saws, hand plane and chisels for given tasks • identify power and pneumatic tools for a given task • safely use a minimum of a power saw, electric plane, impact power drill, nail gun and compressor or equivalent types of equipment for given tasks • maintain equipment according to manufacturer's recommendations or organisational requirements.

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Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

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Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications

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- regulatory and legislative requirements pertaining to using carpentry tools and equipment
- relevant Australian standards
- safe work procedures related to using carpentry tools and equipment
- signage
- verbal or written and graphical instructions
- work bulletins
- work schedules.

Planning and preparation include:

- work site inspection
- equipment defect identification
- assessment of conditions and hazards
- determination of work requirements.

Safety (OHS) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:

- emergency procedures, including emergency shutdown and stopping, extinguishing fires, organisational first aid requirements and evacuation
- handling of materials
- hazard control
- hazardous materials and substances
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - power cables, including overhead service trays, cables and conduits
  - restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
  - working with dangerous materials
- organisational first aid
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices

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- use of firefighting equipment
- use of tools and equipment
- workplace environment and safety.

Plant and equipment include:

- 240v power supplied
- compressor
- generator
- hand held or small single person operated equipment
- pneumatic driven.

Quality requirements include relevant regulations, including:

- Australian standards
- internal company quality policy and standards
- manufacturer specifications, where specified
- workplace operations and procedures.

Materials include:

- bricks
- concrete components
- concrete masonry units
- glass
- insulation
- joinery units
- metal sheeting
- paints and sealants
- plaster or fibre cement sheeting
- reconstituted timber products
- reinforcement materials
- scaffolding components
- structural steel sections and components
- timber.

Environmental requirements include:

- clean-up protection
- noise and dust
- vibration
- waste management.

Statutory and regulatory authorities include:

- federal, state and local authorities administering applicable Acts, regulations and codes of practice.

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Hand, power and pneumatic tools include:

- hand tools:
  - cutting, planing, boring and shaping
  - fixing, fastening and percussion tools
  - holding tools
  - setting out, marking out and levelling tools
- power tools (portable and static):
  - electrical and pneumatic operated tools
  - gas driven tools
  - hoses
  - leads.

•
•

Unit Sector(s)

Functional area

Unit sector Construction

Custom Content Section

Not applicable.

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CPCCCA2003A Erect and dismantle formwork for footings and slabs on ground

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to erect and dismantle formwork to footings and slabs on ground, to establish levels and contain finished concrete. It includes forming basic slabs and forming rebates to slabs on ground and steps to strip footings.

Application of the Unit

Application of the unit

This unit of competency supports achievement of skills for constructing simple formwork, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** to undertake ***planning and preparation***.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
	1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
	1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Erect formwork.	2.1. Design of footing and/or slab on ground is identified from job drawings and specifications, and is checked to be in accordance with legislation, regulations and codes of practice.
	2.2. ***Formwork*** is set out to requirements of drawings and specifications.
	2.3. Fixing and fasteners are selected consistent with construction requirements of the job.
	2.4. ***Formwork shutters and/or edge boxing*** are constructed and erected to site requirements and specifications.
	2.5. Formwork support is braced to job requirements and specifications.
	2.6. Block-outs and cast-in services are installed to specified locations.
	2.7. Release agents are applied to formwork face, where specified, to manufacturer specifications.
3. Strip formwork.	3.1. Edge boxing and bracing/strutting support are removed sequentially and safely.

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ELEMENT	PERFORMANCE CRITERIA
	3.2. Timber components are de-nailed, cleaned and stored or stacked safely for reuse or removal from site.
	3.3. Steel components are cleaned, oiled and stored or stacked to manufacturer's maintenance recommendations.
	3.4. Damaged formwork components are safely discarded after stripping.
4. Clean up.	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	4.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental

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REQUIRED SKILLS AND KNOWLEDGE

abilities

- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- construction terminology
- formwork materials
- formwork techniques
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- plant, tools and equipment types, characteristics, uses and limitation
- processes for setting out and measuring
- processes for calculating material requirements
- quality requirements for formwork
- requirements of application and requirements for line, level and plumb in construction projects
- termite barriers
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan, OHS regulations and state and territory legislation applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- form up a slab on ground a minimum of 9 square metres, incorporating an edge rebate and internal corner to specifications
- form up a step to a foundation excavation to specified masonry units.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the

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EVIDENCE GUIDE

	mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at

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EVIDENCE GUIDE

the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements pertaining to erecting and dismantling formwork for footings and slabs on ground

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RANGE STATEMENT

	• relevant Australian standards • safe work procedures related to erecting and dismantling formwork for footings and slabs on ground • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Planning and preparation include:	• work site inspection • equipment defect identification • assessment of conditions and hazards • determination of work requirements.

Safety (***OHS***) is to be in accordance with state or territory legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	  • working with dangerous materials
	• organisational first aid
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
	• use of firefighting equipment
	• use of tools and equipment

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RANGE STATEMENT

	• workplace environment and safety.
Tools and equipment include:	• air compressors and hoses • automatic levels • bevels • chisels • hammers • hand saws • laser levels • marking equipment • measuring tapes and rules • nail bags • nail guns • pinch bars • power drills and power saws • power leads • saw stools • shovels • spanners • spirit levels • squares (combination/tri) • steel squares • string lines.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Materials include:	• bolts and nuts • boxing, either timber, metal, masonry, fibre cement sheeting or reconstituted timber products • coach screws • metal brackets • nails and spikes • patented metal fasteners • steel tie rods.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory	• federal, state and local authorities

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RANGE STATEMENT

authorities include:	administering applicable Acts, regulations and codes of practice.
Formwork:	• includes prefabricated or in situ and is to be rigid to withstand the mass of wet concrete and actions imposed during placement • formwork construction must comply with specifications to height and level and includes timber, metal or prefabricated for both footings and slabs on ground.
Formwork shutters and edge boxing include:	• an edge rebate.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCCA2011A Handle carpentry materials

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to safely manually handle, store and apply environmental management principles associated with carpentry materials and components. It includes preparing material for mechanical handling.

Application of the Unit

Application of the unit This unit of competency supports achievement of skills to identify commonly used carpentry materials and handle, store and move them safely and efficiently without damage, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained, confirmed and applied from relevant ***information*** for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Manually handle, sort and stack carpentry materials and components.	2.1. Carpentry materials for ***handling*** are moved to specified location, applying safe manual handling techniques. 2.2. Carpentry materials and components are sorted to suit material type and size, stacked for ease of identification and retrieval and for task sequence and job location in accordance with job specifications. 2.3. Carpentry materials and components are ***protected*** against physical and water damage and stored clear of access ways, and for ease of identification, retrieval and distribution.
3. Prepare for mechanical handling of materials.	3.1. Carpentry materials and components are stacked/banded for mechanical handling in accordance with the type of material and plant or equipment to be used. 3.2. Carpentry materials and components are loaded, unloaded, moved or located at specified location.
4. Clean up.	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.

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ELEMENT	PERFORMANCE CRITERIA
	4.2. ***Hazardous materials*** are identified for separate handling. 4.3. ***Non-toxic materials*** are removed using correct procedures. 4.4. ***Dust suppression*** procedures are used to minimise health risk to work personnel and others. 4.5. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

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REQUIRED SKILLS AND KNOWLEDGE

Required knowledge

Required knowledge for this unit is:

- asbestos characteristics and reporting requirements
- carpentry material handling techniques
- construction terminology
- hazardous materials found in construction work sites
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- material sizes
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- processes for the calculation of material requirements
- quality requirements and types of carpentry materials
- types, characteristics, uses and limitations of tools and equipment
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools and equipment • communicate and work effectively and safely with others • safely handle, sort and stack varying lengths of timber, providing quick access and use • safely move and stack a given quantity of sheet material • safely handle carpentry components for one carpentry project.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the

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EVIDENCE GUIDE

	mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at

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EVIDENCE GUIDE

the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements pertaining to handling carpentry materials
- relevant Australian standards

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RANGE STATEMENT

	• safe work procedures related to handling carpentry materials • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Planning and preparation include:	• work site inspection • equipment defect identification • assessment of conditions and hazards • determination of work requirements.

Safety (***OHS***) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • personnel
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working with dangerous materials
	• organisational first aid
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environment and safety.

Tools and equipment include:	• banders

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RANGE STATEMENT

	• hammers • pallets • pinch bars • tin snips • wheelbarrows.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Materials include:	• bricks and concrete masonry units • concrete components • glass • insulation • joinery units • metal sheeting • paints and sealants • plaster or fibre cement sheeting • reconstituted timber products • reinforcement materials • scaffolding components • structural steel sections and components • timber.
Environmental requirements include:	• clean-up protection • noise and dust • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Handling includes:	• handling activities may require assistance of others where size or weight is a factor • manual handling, which includes using pallets, carrying materials using correct lifting techniques and control of waste • preparing for mechanical handling, which includes forklifts, pallet jacks and trucks • procedures such as MSDS, calculating quantities, and stacking and storing of materials.
Protected includes:	• correct handling and stacking techniques without damaging the material • protecting with covers.

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RANGE STATEMENT

Hazardous materials include:	• coatings • glues • inflammable materials • solvents.
Non-toxic materials include:	• general carpentry materials with appropriate labelling.
Dust suppression includes:	• keeping dust in the air to a minimum.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCCA3001A Carry out general demolition of minor building structures

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to carry out general demolition work of minor building structures to facilitate alterations, extensions and additions to a building. It includes work being completed to a work schedule, plans and specifications.

Application of the Unit

Application of the unit This unit of competency supports achievement of skills to safely demolish existing construction work and safely dispose of the waste materials, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** for ***planning and preparation***. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Demolish minor building structures.	2.1. Designated demolition area of ***minor building structure*** is assessed to determine scope of work in accordance with legislation, regulations and codes of practice and ***type of construction system***. 2.2. ***Risks*** are identified and managed, including determining the status of ***existing services***. 2.3. Preparatory work is completed. 2.4. Demolition procedures are carried out consistent with safe and effective processes of dismantling or demolishing and removing materials from location to designated storage area. 2.5. Materials and building component parts are safely and effectively handled using appropriate material handling techniques consistent with the type of building materials and components. 2.6. Materials and components identified for ***salvaging*** are safely and effectively handled, stored and stacked ready for transport in accordance with OHS material handling practices and techniques.

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ELEMENT	PERFORMANCE CRITERIA
3. Clean up.	3.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 3.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- planning and organisational skills to ensure coordinated development of sketches and drawings
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

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REQUIRED SKILLS AND KNOWLEDGE

Required knowledge for this unit is:

- construction terminology
- demolition and building materials
- demolition operations and techniques
- framing and roofing
- hazardous substances, including lead, fibreglass and asbestos
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- plant, tools and equipment types, characteristics, uses and limitation
- processes for the calculation of material removal
- safe use of scaffolding
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan, OHS regulations and state and territory legislation applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- produce the plan for and complete the demolition of a section of a standard house to accommodate an extension, including removal of an external load bearing wall to form an opening of no less than 3 metres wide.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the

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EVIDENCE GUIDE

mandatory task requirements

- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at

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the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements pertaining to carrying out general demolition of minor building structures

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RANGE STATEMENT

	• relevant Australian standards • safe work procedures related to carrying out general demolition of minor building structures • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Planning and preparation include:	• work site inspection • equipment defect identification • assessment of conditions and hazards • determination of work requirements.

Safety (***OHS***) is to be in accordance with state or territory legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including emergency shutdown and stopping, extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in proximity to others
	• organisational first aid
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environment and safety.

Tools and equipment include:	• air compressors • allen keys • angle grinders • brooms • chisels • crow bars • elevated work platforms • hack saws

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RANGE STATEMENT

	• hammers • hand saws • ladders • picks • pincers • pinch bars • pliers • pneumatic and electric tools • power leads • power saws • props • saw stools and planks • scaffolding • shovels • sledge hammers • spanners • water hoses and spray attachments • wheelbarrows.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Materials include:	• bonded asbestos • brickwork • concrete • glass • metal • reconstituted timber products • tiles • timber.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Minor building structure includes:	• detached carports • external sections of buildings (walls, cladding, attached carports, decks and roofs)

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RANGE STATEMENT

	• internal sections of buildings (walling, lining, built in components and wet area) • pergolas and patios • retaining walls and fences • small concrete structures (slabs, pads, paths and edge strips) • small ground level buildings.
Type of construction system includes:	• blockwork • brickwork • concrete • metal framing • timber framing.
Risks include those relating to:	• areas below floors • identification, relocation or disconnection of services • loads supported by walls • security and public health and safety • weatherproofing of the structure.
Existing services include:	• electricity • gas • telephone and other communications • water.
Preparatory work includes:	• acquisition and application of equipment, such as props • avoidance of built-up demolished material • engineering requirements • fall protection • hazardous materials removed separately • isolation of site • permits • removal of combustible material • safe work method statement • specialist trades • spraying water • traffic control • use of dust suppression blanket.
Salvaging includes:	• reusing, recycling or selling removed materials.

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Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCCA3002A Carry out setting out

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to identify site boundaries and survey indicators, and establishing, measuring and setting up profiled set outs for buildings and structural components of building work.

Application of the Unit

Application of the unit This unit of competency supports achievement of skills to set out for a range of construction activities, including the positioning of a building and associated structures on a site, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** for ***planning and preparation***.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. Tools and equipment selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
	1.5. Material quantity requirements are calculated in accordance with plans, specifications and quality requirements.
	1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and statutory and regulatory authority obligations, and are applied.
2. Identify and indicate site boundaries.	2.1. Survey pegs at corners of site are located and identified in accordance with job drawings, specifications and ***site topography***.
	2.2. String lines are set accurately into position to identify ***site boundary markings*** in accordance with site plan and survey pegs.
3. Set out first line for building alignment.	3.1. Measurements of building line from boundary or existing building are determined from site drawings for ***setting out***.
	3.2. Approximate position and length of line, plus building clearance measurement at each end, are determined for hurdle location in accordance with site plan and survey pegs.
	3.3. Pegs and hurdles/profiles are installed approximately level across and between one another with adequate provision to mark footing width on hurdle/profile in accordance with job drawings and specifications.
	3.4. Location for line is accurately marked with nails on hurdles/profiles and line is set taut into position to

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ELEMENT	PERFORMANCE CRITERIA
	true alignment with boundary in accordance with job drawings and specifications without error.
4. Set out right angled corners.	4.1. Corner of building is determined on set building line to true measurement from adjacent boundary and marked with peg in accordance with job drawings and specifications.
	4.2. Right angle is set up to line from corner peg using triangulation principles.
	4.3. Hurdles/profiles are installed to approximate level of other hurdles and line is set taut to right angled alignment.
5. Install other building lines.	5.1. Hurdles for remaining building lines are installed to appropriate locations, approximately level with established hurdles in accordance with job drawings and specifications.
	5.2. Measurements for remaining building lines are accurately marked and nailed on hurdles to dimensions from site drawings.
	5.3. String lines are set taut into position to nailed locations on hurdles in accordance with job drawings and specifications.
6. Building lines are checked for square.	6.1. Diagonal measurements are checked for square and lines are adjusted to provide square relationship within 5mm tolerance over minimum diagonal length of 15m.
	6.2. Measurements are checked for accuracy.
7. Clean up.	7.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	7.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

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REQUIRED SKILLS AND KNOWLEDGE

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- application and requirements for line, level and plumb in construction projects
- basic construction processes
- basic mathematical techniques associated with setting out
- construction plan, symbols and construction terminology
- construction terminology
- job safety analysis (JSA) and safe work method statements
- processes for interpreting engineering drawings and sketches
- processes for setting out
- project quality requirements
- setting out techniques
- site and equipment safety (OHS) requirements
- site isolation and traffic control responsibilities and authorities
- types, characteristics, technical capabilities and limitations of setting out devices.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan, OHS regulations and state and territory legislation applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools and equipment • communicate and work effectively and safely with others • set out a full size L shape building on a relatively level site to specifications.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying

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EVIDENCE GUIDE

	safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

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EVIDENCE GUIDE

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements pertaining to setting out
- relevant Australian standards
- safe work procedures related to setting out
- signage
- verbal or written and graphical instructions

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RANGE STATEMENT

Planning and preparation include:	• work bulletins • work schedules. • work site inspection • equipment defect identification • assessment of conditions and hazards • determination of work requirements.

Safety (***OHS***) is to be in accordance with state or territory legislation, regulations, organisational safety policies and procedures, and project safety plan and may include:	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	  • working with dangerous materials
	• organisational first aid
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environment and safety.

Materials include:	• nails • pegs • timber.
Environmental requirements include:	• clean-up protection • noise and dust • waste management.
Site topography includes:	• flat • sloping

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RANGE STATEMENT

	• steep.
Site boundary markings include:	• building built on line • fence built on line • survey pegs.

Setting out includes:	• footings, including:
	  • pad
	  • posts
	  • slab
	  • strip
	  • stumps
	• residential buildings, commercial buildings and other structures.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCCA3003A Install flooring systems

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to plan, prepare, set out and install timber flooring systems to support imposed loads. It includes application in brick veneer, full masonry and timber frame construction.

Application of the Unit

Application of the unit This unit of competency supports achievement of skills to determine the materials and process and then install a variety of flooring systems, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, ***tools and equipment*** selected to carry out ***flooring system*** tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental policies and procedures and ***statutory and regulatory authorities*** requirements.
2. Set out sub-floor frame.	2.1. Support structure, posts, stumps and piers are positioned and installed to set out lines for building as determined from site drawings in accordance with specifications for ***floor framing***. 2.2. Check support structure, posts, stumps and piers for level and square prior to installation of bearers and joists.
3. Install timber bearers.	3.1. Bearer material is marked and cut to lengths for joining over supports. 3.2. Damp proof course and termite shield are installed where specified by regulation. 3.3. Bearers are located and fixed in accordance with regulations, job drawings and specifications to square, line and level.
4. Install timber floor joists.	4.1. Location for floor joists are set out to spacings from job drawings, specifications and regulations. 4.2. Material lengths for floor joists are selected. 4.3. Floor joists are selected for straightness, located,

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ELEMENT	PERFORMANCE CRITERIA
	fitted and fixed to line and level.
	4.4. Block or herringbone strutting is installed to deep floor joists where specified in accordance with regulations.
	4.5. Blocks and trimmers are fitted and fixed around doorways and openings to provide support in accordance with specifications.
	4.6. Trimmers are cut, fitted and fixed to support sheet flooring joints where specified.
5. Install flooring.	5.1. Flooring materials selected are appropriate for the intended room use and specifications.
	5.2. Floor measurements are confirmed and flooring materials are cut and prepared for installation with a minimum of loss.
	5.3. Flooring is installed and secured in accordance with manufacturer recommendations.
	5.4. Installed flooring is completed in preparation for the next process.
6. Clean up.	6.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	6.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions

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REQUIRED SKILLS AND KNOWLEDGE

- read and interpret:
  - documentation from a variety of sources
  - plans, specifications and drawings
- report faults
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- construction terminology
- damp proof systems
- floor construction techniques
- flooring system installation techniques
- flooring system materials, including fire control and separation materials required by the Building Code of Australia (BCA) and other legislation
- flooring system types, characteristics, materials, uses and limitations
- imposed loads
- insulation products
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- plant, tools and equipment types, characteristics, uses and limitation
- processes for the calculation of material requirements
- quality requirements
- regulations applicable to floor framing and flooring
- setting out and levelling techniques
- termite barriers
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan, OHS regulations and state and territory legislation applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools, plant and equipment • communicate and work effectively and safely with others • complete as a minimum one bearer and joist system constructed on a support system (stumps, posts or piers) applicable to local conditions, to carry external walls and internal walls parallel to joists for a full sized home or equivalent (including a bedroom, lounge, kitchen and bathroom not less than 30 square metres) • install a tongue and groove fitted strip flooring surface and an approved wet area floor system to a bathroom area • install a system of similar size as above with either a sheet or strip platform system.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

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EVIDENCE GUIDE

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role

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EVIDENCE GUIDE

and the practical requirements of the workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- Manufacturer specifications and instructions
- memos
- MSDS

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RANGE STATEMENT

	• organisation work specifications and requirements. • plans and specifications • regulatory and legislative requirements pertaining to installing flooring systems • relevant Australian standards • safe work procedures related to installing flooring systems • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Planning and preparation include:	• work site inspection • equipment defect identification • assessment of conditions and hazards • determination of work requirements.

Safety (***OHS***) is to be in accordance with state or territory legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	  • working with dangerous materials
	• organisational first aid
	• personal protective clothing and equipment prescribed under legislation, regulations and

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RANGE STATEMENT

	workplace policies and practices • use of firefighting equipment • use of tools and equipment • workplace environment and safety.
Tools and equipment include:	• air compressors and hoses • floor cramps • hammers • hand saws • marking equipment • measuring tapes and rules • nail bags • nail guns • nail punches • power drills and power leads • power planes and optical levelling equipment • power saws • power screwdrivers • spanners • spirit levels • squares (combination/tri) • string lines.
Flooring systems include:	• decking • full or partial in line and deep joist construction.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.

Materials include:	• adhesives and patented metal fasteners
	• connectors
	• metal
	• nails
	• reconstituted timber products and piers
	• screws
	• timber
	• flooring materials, which:
	  • include strip, boards and sheet
	  • may be either fitted or platform construction.

Environmental requirements	• clean-up protection

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RANGE STATEMENT

include:	• noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.

Floor framing includes:	• conventional bearers and joists
	• drop in (or in-line or deep) joists construction
	• sub-floor frame, including timber or metal
	• types of sub-floor support construction, including:
	  • concrete stumps
	  • masonry piers
	  • patented adjustable supports
	  • steel posts
	  • timber or brick walls
	  • timber stumps.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCCA3004A Construct wall frames

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to plan, prepare, set out, construct and erect load bearing and non-load bearing wall frames for the different types of loadings determined by the roof top and bracing configuration. It includes set out, cutting and fabrication of both timber and metal wall frames, and the erection, connection and bracing of wall frames to specifications.

Application of the Unit

Application of the unit This unit of competency supports achievement of skills to construct from raw materials a range of wall frames commonly used in the construction industry, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified and applied for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations.
2. Construct wall frames.	2.1. ***Wall frame*** components are identified and selected in accordance with regulatory criteria and ***load bearing*** requirements. 2.2. Location of walls is set out on a slab or sub floor frame in accordance with dimensions, drawings, plans and specifications. 2.3. Wall plates are set out and cut to length. 2.4. Wall plates are marked to accommodate studs and openings and/or cladding and lining types. 2.5. Pattern stud is set out. 2.6. Studs, trimmers and noggings are cut to length. 2.7. Wall frames are fabricated, including lintels and ***bracing***. 2.8. Wall frames are erected, fixed into place and aligned to specification. 2.9. Erected walls are temporarily braced. 2.10. Walls are straightened, plumbed and aligned.
3. Clean up.	3.1. Work area is cleared and materials disposed of,

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ELEMENT	PERFORMANCE CRITERIA
	reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	3.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- construction terminology

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REQUIRED SKILLS AND KNOWLEDGE

- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- plant, tools and equipment types, characteristics, uses and limitation
- processes for setting out and measuring
- processes for calculating material requirements
- quality requirements for wall frames
- timber types, structural properties and uses including engineered timber products
- wall frame construction techniques
- wall framing materials, including fire control and separation materials required by the Building Code of Australia (BCA) and other legislation
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan, OHS regulations and state and territory legislation applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools, plant and equipment • communicate and work effectively and safely with others • plan, prepare, set out, construct and erect framed walls to accommodate roofing to regulation height and to a minimum of a full size one bedroom home or equivalent (includes a bedroom, lounge, kitchen and bathroom of not less than 30 square metres), including window and door openings, bracing, an internal/external corner and a T junction to specifications involving both timber and metal frames.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory

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EVIDENCE GUIDE

or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured

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EVIDENCE GUIDE

learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements

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RANGE STATEMENT

	• plans and specifications • regulatory and legislative requirements pertaining to constructing wall frames • relevant Australian standards • safe work procedures related to constructing wall frames • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Planning and preparation include:	• work site inspection • equipment defect identification • assessment of conditions and hazards • determination of work requirements.

Safety (***OHS***) is to be in accordance with state or territory legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	  • working with dangerous materials
	• organisational first aid
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices

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RANGE STATEMENT

	• use of firefighting equipment • use of tools and equipment • workplace environment and safety.
Tools and equipment include:	• air compressors and hoses • clamps • docking saws and drop saws • hammers • jigs/stops • marking equipment • masonry drills • measuring tapes and rules • nail bags • nail guns • pop riveters • power drills • power leads • power saws • power screwdrivers • saw stools • spanners • spirit levels • squares (combination/tri).
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Materials include:	• bolts and nuts • masonry anchors • metal • nails and spikes • patented metal fasteners • pop rivets • screws • synthetic materials • timber.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory	• federal, state and local authorities

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RANGE STATEMENT

authorities include:	administering applicable Acts, regulations and codes of practice.
Wall frame includes:	• both load bearing and non-load bearing frames of timber and metal • synthetic materials for construction and erection to a slab on ground and to a sub floor frame • wall frame components, including plates, studs, noggings, trimmers, lentils and blocking • wall framing does not include the set out of the roof on the top plate but the set out of the frame is to include allowance for the types of cladding or lining to be used.
Load bearing includes:	• any wall that carries a roof loading component.
Bracing:	• includes temporary and permanent types • may be made of timber, metal or sheet material • may be fixed in accordance with specifications.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCCA3005B Construct ceiling frames

Modification History

Photovoltaic (solar) panels added to range statement
Equivalent to CPCCCA3005A

Unit Descriptor

This unit of competency specifies the outcomes required to plan, prepare, set out, construct and erect ceiling frames to accommodate ceiling joists, hanging beams, strutting beams and composite beams. It includes selection of members and setting out of the ceiling frame in conjunction with the roof members.

Application of the Unit

This unit of competency supports achievement of skills to determine materials and process, and then construct a range of ceiling frames used in the construction industry, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions, including plans, specifications, quality requirements and operational details are obtained for ***planning*** the work and confirmed and applied from relevant ***information***.
		1.2	***Safety (OHS)*** requirements are followed in accordance with safety plans and policies.
		1.3	Signage and barricade requirements are identified and implemented.
		1.4	Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
		1.5	Material quantity and ***quality requirements*** are calculated in accordance with plans and specifications.
		1.6	***Materials*** appropriate to ***construction of ceiling frames***, including fire resistance ratings are identified, obtained, prepared, safely handled and located ready for use.
		1.7	***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
		1.8	Passive and active fire control elements for ceiling frame construction and installation are identified and applied.

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2	Locate ceiling joists.	2.1	***Ceiling frame components*** are identified and selected in accordance with regulatory criteria.
		2.2	Location of ceiling joists are set out on the top plate to specifications for spacings of roof and ceiling members.
		2.3	Ceiling joists and trimmers are cut to length, placed and securely fixed to locations in accordance with specifications.
3	Install hanging beams.	3.1	Hanging beam sizes and spacings are checked in accordance with regulatory criteria.
		3.2	***Hanging beams*** are installed.
		3.3	Hanging beams on external walls are placed alongside rafter locations where specified.
		3.4	Ceiling joists are connected using appropriate ***connecting methods*** to hanging beams.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
		4.2	Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- ceiling frame construction techniques
- ceiling framing materials, including steel and their rated fire resistance
- wall framing and roof construction, ceiling lining materials, including fire control and separation required by the National Construction Code (NCC) and other legislation
- construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- plant, tools and equipment types, characteristics, uses and limitation

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- processes for the calculation of material requirements
- quality requirements for ceiling frames
- roofing set out
- timber types, structural properties and uses, including engineered timber products
- workplace and equipment safety requirements.

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan, OHS regulations and state and territory legislation applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools, plant and equipment • communicate and work effectively and safely with others • set out, construct and erect a ceiling incorporating a hanging beam, ceiling trimmers and strutting beam to specifications for a full size one bedroom home or equivalent (includes a bedroom, lounge, kitchen and bathroom not less than 30 square metres) • complete construction tasks involving both timber and metal materials and components • ensure correct selection and use of fire-rated

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materials and methods of construction.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and

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environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Planning includes:

- work site inspection
- equipment defect identification
- assessment of conditions and hazards
- determination of work requirements.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or

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external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements pertaining to constructing ceiling frames
- relevant Australian standards
- safe work procedures related to constructing ceiling frames
- signage
- verbal or written and graphical instructions
- work bulletins
- work schedules.

Safety (OHS) is to be in accordance with state or territory legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- handling of materials
- hazard control
- hazardous materials and substances
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - photovoltaic (solar) panels
  - power cables, including overhead service trays, cables and conduits
  - restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
  - working with dangerous materials
- organisational first aid
- personal protective clothing and equipment

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prescribed under legislation, regulations and workplace policies and practices
- use of firefighting equipment
- use of tools and equipment
- workplace environment and safety.

Tools and equipment include:

- air compressors and hoses
- chisels
- hammers
- hand saws
- marking equipment
- measuring tapes and rules
- nail bags
- nail guns
- power drills
- power leads
- power saws
- roofing square
- saw stools
- scaffolding
- spirit levels
- squares (combination/tri)
- string lines.

Quality requirements include relevant regulations, including:

- Australian standards
- internal company quality policy and standards
- manufacturer specifications, where specified
- workplace operations and procedures.

Materials include:

- bolts
- metal
- nails
- patented fasteners
- reconstituted timber products
- screws
- synthetic materials
- timber.

Construction of ceiling frames:

- is to be completed in conjunction with the roof members

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- methods include ensuring compliance with incipient spread of fire requirements
- selection of hangers and composite beams will be determined by the building geometry and roof pitch.

Environmental requirements include:

- clean-up protection
- noise and dust
- vibration
- waste management.

Statutory and regulatory authorities include:

- federal, state and local authorities administering applicable Acts, regulations and codes of practice.

Ceiling frame components include:

- synthetic materials
- timber and metal components.

Hanging beams include:

- ceiling frame bracing, which may be included where high wind loadings are specified
- hanging beams with end bearing, which are to be positioned so that full load distribution to the supporting wall frame is achieved
- installation, which may be incorporated with strutting and/or composite beams.

Connecting methods include:

- metal straps
- patented connectors
- timber cleats.

Unit Sector(s)

Functional area

Unit sector Construction

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Custom Content Section

Not applicable.

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CPCCCA3006B Erect roof trusses

Modification History

Change to performance criterion
Equivalent to CPCCCA3006A
Added range item: solar panels

Unit Descriptor

This unit of competency specifies the outcomes required to select, set out, erect and brace roof trusses to accommodate roof coverings for waterproofing purposes. It includes gable, hip and valley, and hip roofing types.

Application of the Unit

This unit of competency supports achievement of skills to safely and efficiently erect pre-built roof trusses for gable, hip and valley, hip and flat roof construction projects, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** for ***planning and preparation*** purposes.
		1.2	***Safety (OHS)*** requirements are followed in accordance with safety plans and policies.
		1.3	Signage and barricade requirements are identified and implemented.
		1.4	Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
		1.5	Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
		1.6	***Materials*** appropriate to the work application are identified, obtained, checked to ensure fitness for purpose, prepared, safely handled and located ready for use according to Australian standards.
		1.7	***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.

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2	Erect roof trusses.	2.1	Location of ***roof trusses*** for ***hip and valley roofs*** are set out on wall top plates to plan layout and specifications.
		2.2	Steel frames are temporarily earthed during erection and are connected to permanent earthing system upon completion.
		2.3	Roof trusses are erected and fixed, including temporary bracing, to set out positions in correct sequence to line at apex and plumb.
		2.4	Top chord is installed above wall plate to be constant height above wall plate.
		2.5	Ceiling trimming and creeper rafter members are fixed to specifications.
		2.6	Bottom chord of truss is used to provide lateral support for internal walls.
		2.7	***Roof bracing*** is provided through hip construction, valley construction, diagonal metal tension or timber bracing or a combination of these, and fixed to specification.
		2.8	Lateral restraints to truss chords are fixed in position to manufacturer specifications.
3	Clean up.	3.1	Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
		3.2	Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- plant, tools and equipment types, characteristics, uses and limitation
- processes for the calculation of material requirements
- quality requirements for roof trusses
- roof bevels
- roof calculations for lengths, quantities and pitch

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- roof load transfer
- roof shape and geometry
- roof truss erection and construction techniques
- roof truss materials and installation, including fire control and separation materials required by the National Construction Code (NCC) and other legislation
- roof types and truss components
- roofing regulations
- techniques for lifting and positioning of trusses
- temporary and permanent bracing
- timber types, structural properties and uses, including engineered timber products
- truss set out
- workplace and equipment safety requirements.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan, OHS regulations and state and territory legislation applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- set out and erect a roof comprising a minimum of one hip end, a valley and enough standard trusses to incorporate bracing for a full size roof in timber and metal.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements

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- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

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Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements pertaining to erecting roof trusses
- relevant Australian standards
- safe work procedures related to erecting roof trusses
- signage
- verbal or written and graphical instructions
- work bulletins
- work schedules.

Planning and preparation include:

- work site inspection
- equipment defect identification
- assessment of conditions and hazards
- determination of work requirements.

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Safety (OHS) is to be in accordance with state or territory legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- handling of materials
- hazard control
- hazardous materials and substances
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - photovoltaic (solar) panels
  - power cables, including overhead service trays, cables and conduits
  - restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
  - working with dangerous materials
- organisational first aid
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- use of firefighting equipment
- use of tools and equipment
- workplace environment and safety.

Tools and equipment include:

- air compressors and hoses
- clamps
- hammers
- marking equipment
- measuring tapes and rules
- nail bags
- nail guns
- power drills
- power leads

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- power saws
- saw stools
- scaffolding
- screwdrivers
- spanners
- spirit levels
- squares (combination/tri)
- string lines
- welding equipment.

Quality requirements include relevant regulations, including:

- Australian standards
- internal company quality policy and standards
- manufacturer specifications, where specified
- workplace operations and procedures.

Materials include:

- bolts
- bracing material
- nails
- patented fasteners
- screws
- slotted brackets for truss movement
- timber and metal trusses.

Environmental requirements include:

- clean-up protection
- noise and dust
- vibration
- waste management.

Statutory and regulatory authorities include:

- federal, state and local authorities administering applicable Acts, regulations and codes of practice.

Roof trusses can be:

- timber or metal
- fixed to timber or steel wall plates.

Hip and valley roofs:

- include scotch valleys and hip ends
- may include Dutch gables.

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Roof bracing includes:

- elementary bracing principles for various shaped roofs.

Unit Sector(s)

Functional area

Unit sector Construction

Custom Content Section

Not applicable.

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CPCCCA3007C Construct pitched roofs

Modification History

Photovoltaic (solar) panels added to range statement
Equivalent to CPCCCA3007B

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to select, set out, construct and erect pitched roofs to accommodate roof coverings for waterproofing purposes. It includes scotch valley gable, hip and valley, broken hip and valley and combinations thereof.

Application of the Unit

Application of the unit

This unit of competency supports achievement of skills to construct scotch valley, broken hip and valley gable, hip and valley, hip and flat roofs in a range of construction projects, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Set out and prepare members for pitched roof erection.	2.1. Set out for position of members is checked against top of plates in accordance with drawings and specifications. 2.2. ***Pattern rafter*** is set out and cut to length allowing for overhang. 2.3. Main ***ridge boards*** are marked and cut to length. 2.4. Common rafters are cut to length and checked. 2.5. Common rafters are erected in correct sequence. 2.6. ***Bevels and lengths*** for hip and valley rafters are determined from pitch of roof. 2.7. Hip and valley rafters are cut and fixed. 2.8. Creeper rafters are cut and fixed from pattern rafter allowing for overhang.
3. Install roof support.	3.1. Bevels and lengths for under purlins are determined. 3.2. Under purlins are cut and installed. 3.3. ***Struts*** are measured, cut and installed to under ***purlins***, hips, valley and ridges to regulation. 3.4. Collar ties are installed to regulatory requirements.

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ELEMENT	PERFORMANCE CRITERIA
	3.5. Trimmers are fitted to gable ends to take gable end rafter and barge board.
	3.6. Valley boards are cut and fixed.
4. Clean up.	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	4.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

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REQUIRED SKILLS AND KNOWLEDGE

Required knowledge

Required knowledge for this unit is:

- ceiling framing
- construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- pitched roof construction techniques
- plans, specifications and drawings
- plant, tools and equipment types, characteristics, uses and limitation
- processes for the calculation of material requirements
- quality requirements for pitched roofs
- roof calculations for lengths, quantities and pitch
- roof construction and ceiling lining materials, including fire control and separation material required by the Building Code of Australia (BCA) and other legislation
- roof geometry
- roof set out
- roof types
- roofing materials
- roofing regulations
- timber types, structural properties and uses including engineered timber products
- workplace and equipment safety requirements.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

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EVIDENCE GUIDE

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan, OHS regulations and state and territory legislation applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools, plant and equipment • communicate and work effectively and safely with others • set out, construct and erect a flat roof under 10(for a full sized one bedroom home or equivalent (including a bedroom, lounge, kitchen and bathroom not less than 30 square metres) • set out, construct and erect a scotch valley, broken hip and valley, hip and valley roof incorporating a gable end for a full sized one bedroom home or equivalent (including a bedroom, lounge, kitchen and bathroom not less than 30 square metres), including set out of a pattern rafter with creeper reductions and methods of roof bevels and roof member lengths.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices

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EVIDENCE GUIDE

- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured

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EVIDENCE GUIDE

learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements pertaining to constructing a pitched roof
- relevant Australian standards
- safe work procedures related to constructing a pitched roof
- signage
- verbal or written and graphical instructions

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RANGE STATEMENT

	• work bulletins • work schedules.
Planning and preparation include:	• work site inspection • equipment defect identification • assessment of conditions and hazards • determination of work requirements.

Safety (***OHS***) is to be in accordance with state or territory legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • photovoltaic (solar) panels
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	  • working with dangerous materials
	• organisational first aid
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environment and safety.

Tools and equipment include:	• air compressors and hoses • bevels • chisels • hammers

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RANGE STATEMENT

	• hand saws • marking equipment • measuring tapes and rules • nail bags • nail guns • power drills • power saws and power leads • protractors • saw stools • scaffolding • spirit levels • squares (combination/tri) • stair clips and tables • steel squares and fence • string lines.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Materials include:	• bolts and nails • patented fasteners • screws • timber.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Pattern rafter includes:	• determining pitch and plumb cut for common rafters • height above birdsmouth • length of common rafter for pitch of roof.
Ridge boards include:	• abutment joints scarfed or butt jointed • those marked for rafter positions from wall plates.
Bevels and lengths:	• can be ascertained by geometry, tables, applied method, steel square, direct method or trigonometry

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RANGE STATEMENT

	• lengths may be determined by tables, scale, direct method, steel square or trigonometry.
Strutting and ***purlins*** include:	• accurate and close fitting joints • patented systems.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCCA3008B Construct eaves

Modification History

Photovoltaic (solar) panels added to range statement
Equivalent to CPCCCA3008A

Unit Descriptor

This unit of competency specifies the outcomes required to prepare, set out and construct eaves, including the cutting and fixing of fascias and barges to provide a finish between the wall and the roof. It includes boxed eaves and the finish to gable ends.

Application of the Unit

This unit of competency supports achievement of skills constructing eaves for roof finishing in a range of construction projects, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare	1.1	Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** for ***planning and preparation*** purposes.
		1.2	***Safety (OHS)*** requirements are followed in accordance with safety plans and policies.
		1.3	Signage and barricade requirements are identified and implemented.
		1.4	Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
		1.5	Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
		1.6	***Materials*** appropriate to the work application including required fire resistance rating are identified, obtained, prepared, safely handled and located ready for use.
		1.7	***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
		1.8	Passive and active fire control elements for eaves

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			construction are identified and applied.
2	Install fascia and barge	2.1	Overhang of rafters is marked and cut to line, plumb and angle.
		2.2	***Gable ends*** are trimmed for overhang where a verge rafter is not used.
		2.3	***Fascia*** is fitted and fixed to roof structure overhang to line and level.
3	Construct framework for eaves or soffits	3.1	Framework structure for eaves type are identified, and ***eaves design*** is established and set out to drawings and specifications.
		3.2	Timber framework members are set out, marked and cut to lengths in accordance with methods of joining and proposed framework structure.
		3.3	Boxed eaves constructed with soffit bearers are fixed to wall frame or supported by hangers from rafters, to line and level.
		3.4	Boxed eaves structure is installed, clear of top of masonry walls in veneer construction to allow for frame shrinkage and settlement.
		3.5	Eaves structure members are securely fixed, including back blocking and trimmers.
4	Line and clad eaves and soffits	4.1	Eaves cladding and sheeting material is marked and cut to shape to suit task application and jointing methods.
		4.2	Eaves lining, cladding and sheeting are fitted, ***joined*** and fixed in accordance with type of material, task application and specifications.
		4.3	Mouldings are fitted and fixed to specifications to finish eaves.
		4.4	Sloping eaves are fitted to underside of rafters or framing for fixing and joining of material.

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5	Clean up	5.1	Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
		5.2	Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- construction terminology
- eaves construction techniques, including fire control and separation required by the National Construction Code (NCC) and other legislation
- eaves materials, including their rated fire resistance
- job safety analysis (JSA) and safe work method statements
- levelling techniques
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- plant, tools and equipment types, characteristics, uses and limitation

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- processes for the calculation of material requirements
- quality requirements for eaves construction
- roof geometry and construction
- safe use of scaffolding
- timber types, structural properties and uses, including engineered timber products
- wall framing construction
- workplace and equipment safety requirements.

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan, OHS regulations and state and territory legislation applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools, plant and equipment • communicate and work effectively and safely with others • completion of marking and cutting of roof members to line to accommodate plumb fascia and barge for three metres of overhand barge eaves, three metres of boxed eaves and three metres of raking eaves, ensuring correct selection and use of fire-rated

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materials and methods of construction, each to include:

- an apex junction on the barge
- a junction between the barge and the plumb fascia
- a junction at the valley
- an eaves junction at the hip to a brick wall.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and

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correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where

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specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements pertaining to constructing eaves
- relevant Australian standards
- safe work procedures related to constructing eaves
- signage
- verbal or written and graphical instructions
- work bulletins
- work schedules.

Planning and preparation include:

- work site inspection
- equipment defect identification
- assessment of conditions and hazards
- determination of work requirements.

Safety (OHS) is to be in accordance with state or territory legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- handling of materials
- hazard control
- hazardous materials and substances
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - photovoltaic (solar) panels
  - power cables, including overhead service trays, cables and conduits
  - restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others

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- working with dangerous materials
- organisational first aid
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- use of firefighting equipment
- use of tools and equipment
- workplace environment and safety.

Tools and equipment include:

- air compressors and hoses
- bevels
- chisels
- hammers
- hand saws
- marking equipment
- measuring tapes and rules
- nail bags
- nail guns
- power drills
- power saws and power leads
- protractors
- saw stools
- scaffolding
- spirit levels
- squares (combination/tri)
- stair clips and tables
- steel squares and fence
- string lines.

Quality requirements include relevant regulations, including:

- Australian standards
- internal company quality policy and standards
- manufacturer specifications, where specified
- workplace operations and procedures.

Materials include:

- beads
- fibre cement sheeting
- joining mould
- metal
- plaster
- quads

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	• reconstituted timber products • timber • timber battens • timber lining boards.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Gable ends:	• can be boxed or raked and raked eaves • includes exposed rafters or soffit finish.
Fascia (and fascia gutter and barges) include:	• methods include ensuring compliance with incipient spread of fire requirements methods • timber or metal and overhang types, including conventional fascia gutter and concealed.
Eaves design:	• includes sloping soffits and boxed eaves • may incorporate verandas, concealed gutters and open eaves.
Joined includes:	• jointing methods involving plastic, timber or metal moulds.

Unit Sector(s)

Functional area

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCCA3009B Construct advanced roofs

Modification History

Minor change made in prerequisite unit CPCCCA3007C
Equivalent to CPCCCA3009A

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to plan, prepare, set out and construct pitched roofs on irregular plan building shapes which may have skewed, splayed or hexagonal ends. It includes such roofs that include dormer windows and may be of gable, hip, hip and valley, or combinations of these that are applied to different types and styles of buildings.

Application of the Unit

Application of the unit

This unit of competency supports achievement of skills to construct complex roofs in a variety of patterns applicable to a range of construction projects, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

CPCCCA3007C	Construct pitched roofs
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application including required fire resistance rating are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied. 1.8. Passive and active fire control elements for roof construction are identified and applied.
2. Set out and prepare members for roof erection.	2.1. Set out for position of members is checked against top of plates in accordance with drawings and specifications for ***advanced roof construction***. 2.2. ***Pattern rafter*** is set out and cut to length allowing for overhang. 2.3. Main ***ridge boards*** are marked and cut to length. 2.4. Common rafters are cut to length and checked. 2.5. Common rafters are erected in correct sequence. 2.6. ***Bevels and lengths*** for hip and valley rafters are determined from pitch of roof. 2.7. Hip and valley rafters are cut and fixed. 2.8. Creeper rafters are cut and fixed from pattern rafter, allowing for overhang.
3. Install roof support.	3.1. Bevels and lengths for under purlins are determined. 3.2. Under ***purlins*** are cut and installed.

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ELEMENT	PERFORMANCE CRITERIA
	3.3. ***Struts*** are measured, cut and installed to under purlins, hips, valley and ridges to regulation.
	3.4. Collar ties are installed to regulatory requirements.
	3.5. Trimmers are fitted to gable ends to take gable end rafter and barge board.
	3.6. Valley boards are cut and fixed.
4. Clean up.	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	4.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities

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REQUIRED SKILLS AND KNOWLEDGE

- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- ceiling framing
- construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- pitched roof construction techniques, including fire control and separation required by the Building Code of Australia (BCA) and other legislation
- plans, specifications and drawings
- plant, tools and equipment types, characteristics, uses and limitation
- processes for the calculation of material requirements
- quality requirements for advanced roofs
- roof calculations for lengths, quantities and pitch
- roof geometry
- roof set out
- roof types and design
- roofing materials, including their rated fire resistance
- roofing regulations
- timber types, structural properties and uses, including engineered timber products
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan, OHS regulations and state and territory legislation applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools, plant and equipment • communicate and work effectively and safely with others • complete the roof to be constructed, which must include a hip end other than square on plan (hexagonal or octagonal), for a full size project ensuring correct selection and use of fire-rated materials and methods of construction.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement

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EVIDENCE GUIDE

- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice,

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EVIDENCE GUIDE

with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements pertaining to constructing advanced roofs

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RANGE STATEMENT

	• relevant Australian standards • safe work procedures related to constructing advanced roofs • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Planning and preparation include:	• work site inspection • equipment defect identification • assessment of conditions and hazards • determination of work requirements.

Safety (***OHS***) is to be in accordance with state or territory legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	  • working with dangerous materials
	• organisational first aid
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environment and safety.

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RANGE STATEMENT

Tools and equipment include:	• air compressors and hoses • bevels • chisels • hammers • hand saws • marking equipment • measuring tapes and rules • nail bags • nail guns • power drills • power saws and power leads • protractors • saw stools • scaffolding • spirit levels • squares (combination/tri) • stair clips and tables • steel squares and fences • string lines.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Materials include:	• bolts • metal • nails • patented fasteners • screws • timber.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Advanced roof construction:	• is to include the major roof and the additional minor roof components for the same building • types include a junction and a hip end other than square on plan and include hexagonal,

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RANGE STATEMENT

	octagonal, conical, pyramidal, splayed ends, equal and unequal spans, unequal pitch, Dutch gable, gambrel and mansard • methods include ensuring compliance with incipient spread of fire requirements.
Pattern rafter includes determining:	• height above birdsmouth • length of common rafter for pitch of roof • pitch and plumb cut for common rafters.
Ridge boards include:	• abutment joints scarfed or butt jointed • those marked for rafter positions from wall plates.
Bevels and lengths:	• determination of bevels may be ascertained by geometry, tables, applied method, steel square, direct method or trigonometry • lengths may be determined by tables, scale, direct method, steel square or trigonometry.
Purlins and ***struts*** include:	• patented systems and joints, which are to be accurate and close fitting.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCCA3010A Install and replace windows and doors

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to plan, prepare, set out and install window and door units, and to replace window and door units to different types and styles of buildings for access, security, weather proofing and replacement of defective windows and doors. It includes timber and metal window and door units.

Application of the Unit

Application of the unit

This unit of competency supports achievement of skills to install windows and doors in new or existing buildings for a range of construction projects, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied using relevant ***information*** for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Install window units to frame.	2.1. ***Window*** opening size is checked to be greater than overall window frame. 2.2. ***Reveals*** are joined and fixed securely to frames where specified. 2.3. Window unit is located to suit brickwork and eaves finish for veneer construction, whichever is applicable. 2.4. Window unit is positioned in place so that head/sill are level and stiles are plumb and in wind, ensuring reveals or frame are finished flush with face of inside wall lining. 2.5. Window is packed and fixed to wall frame through/to studs, in accordance with specified fixing and fastening methods.
3. Replace window units/door frames.	3.1. Architraves and nosing are removed. 3.2. Sill bricks or cladding are removed where specified. 3.3. Fasteners are cut, packing removed and flashing detached from frame. 3.4. Window unit/ ***door frame*** is removed.

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ELEMENT	PERFORMANCE CRITERIA
	3.5. Window unit/door frame and ***window components*** are installed to plumb, level and wind.
	3.6. Architraves and mouldings are replaced.
4. Prepare door opening, and construct and fix jamb.	4.1. Door frame opening size is checked to be greater than the overall door jamb width and height, allowing for plumbing of stiles, thickness of floor covering, levelling of door head and level of floor.
	4.2. Jamb stiles are marked and cut to length allowing for clearances according to specifications.
	4.3. Head is trenched to accommodate jamb stiles allowing for clearance according to specification.
	4.4. Jamb frame is assembled, squared and braced with rebates flush.
	4.5. Joints and rebates are cleaned and finished to quality requirements.
5. Install door and door unit.	5.1. ***Door*** unit is positioned in place so that the head/sill is level and stiles are plumb and in wind, ensuring reveals or frame finished flush with face of inside wall lining.
	5.2. Door is fitted to jamb allowing for clearances according to specifications with lock stile door backed off to facilitate correct operation.
	5.3. Hinges are marked out on door and jamb.
	5.4. Hinges are fitted to door and jamb.
	5.5. Final adjustments of door are made.
	5.6. ***Door furniture components*** are fitted and fixed to manufacturer specifications.
6. Clean up.	6.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	6.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- construction terminology
- flashing requirements and installation techniques
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- plant, tools and equipment types, characteristics, uses and limitation
- processes for setting out
- processes for the calculation of material requirements
- quality requirements for windows and doors
- window and door installation and replacement techniques
- window and door materials
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan, OHS regulations and state and territory legislation applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools, plant and equipment • communicate and work effectively and safely with others • install one standard window or glazed sliding door unit to specifications • replace one standard window or glazed sliding door unit to specifications • construct and fit one standard external rebated door jamb/frame to specifications • fit and hang one standard door, including the door furniture and a pair of doors with door jambs to specifications.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory

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or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured

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learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements

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RANGE STATEMENT

	• plans and specifications • regulatory and legislative requirements pertaining to installing and replacing windows and doors • relevant Australian standards • safe work procedures related to installing and replacing windows and doors • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Planning and preparation include:	• work site inspection • equipment defect identification • assessment of conditions and hazards • determination of work requirements.

Safety (***OHS***) is to be in accordance with state or territory legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	  • working with dangerous materials
	• organisational first aid
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices

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RANGE STATEMENT

	• use of firefighting equipment • use of tools and equipment • workplace environment and safety.
Tools and equipment include:	• air compressors and hoses • bevels • chisels • hammers • hand saws • marking equipment • measuring tapes and rules • nail bags • nail guns • power drills • power leads • power saws • protractors • saw stools • scaffolding • spirit levels • squares (combination/tri) • stair clips and tables • steel squares and fences • string lines.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Materials include:	• barrel bolts • cabin hooks • closers • dead bolts • flash bolts • flashings • handles • hinges (butt and parliament) • latches • locks • metal • night latches • passage sets

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RANGE STATEMENT

	• timber.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Windows include:	• all size windows • casement, double hung, hopper, straight and sliding, including glazed sliding doors, curved and bay.
Reveals:	• may or may not be fitted with windows.
Door frames:	• may be fixed first and then the door installed or doors may be fixed to the frame prior to installation • doors may be hung to timber or metal frames.
Window components include:	• reveal • sill • trimmers.
Doors include:	• flush panel, framed and panelled, and glazed • door units are to cover hinged door units and include standard doors, sliding, flywire, combination window/door units, door sidelight units (glazed or unglazed) and internal doors • door jambs, door stiles and door sills.
Door furniture components include:	• grips, latches/deadlocks, push plates and closers • handles and locks.

Unit Sector(s)

Unit sector Construction

Co-requisite units

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Co-requisite units Nil

Functional area

Functional area

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CPCCCA3011A Refurbish timber sashes to window frames

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to refurbish timber sashes to window frames to rectify operation of external windows for ongoing use. It includes timber casement windows and double hung windows, and the refitting of timber sashes.

Application of the Unit

Application of the unit

This unit of competency supports achievement of skills to undertake refurbishment of windows in existing buildings, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out ***window refurbishment*** are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Refurbish casement windows.	2.1. Sash fittings are removed. 2.2. Sash is removed. 2.3. New sash is fitted to correct margins and hung. 2.4. ***Window components and furniture*** are fitted to manufacturer specifications.
3. Refurbish double hung windows.	3.1. Sashes are removed from the ***frame*** in correct sequence. 3.2. New sashes are fitted, where specified, to correct margins ensuring waterproofing to bottom rail, and sash is maintained. 3.3. Sash cords/spiral balances and frame components are replaced. 3.4. Window furniture is replaced.
4. Clean up.	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 4.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with

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ELEMENT	PERFORMANCE CRITERIA
	manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings

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REQUIRED SKILLS AND KNOWLEDGE

- processes for the calculation of material requirements
- quality requirements for timber sashes and window frames
- timber sash refurbishment techniques
- tools and equipment types, characteristics, uses and limitation
- window frame and sash construction
- window materials
- window measurements and calculations
- window set outs
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan, OHS regulations and state and territory legislation applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools and equipment • communicate and work effectively and safely with others • remove, refurbish and refit a sash to a top or side hung casement frame • remove, refurbish and refit a pair of sashes to a double hung window.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements

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EVIDENCE GUIDE

- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete

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EVIDENCE GUIDE

confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements pertaining to refurbishing timber sashes to window frames
- relevant Australian standards

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RANGE STATEMENT

	• safe work procedures related to refurbishing timber sashes to window frames • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Planning and preparation include:	• work site inspection • equipment defect identification • assessment of conditions and hazards • determination of work requirements.

Safety (***OHS***) is to be in accordance with state or territory legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	  • working with dangerous materials
	• organisational first aid
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environment and safety.

Tools and equipment include:	• chisels

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RANGE STATEMENT

	• clamps • cutting knives • docking saws and drop saws • hammers • hand saws • marking equipment • measuring tapes and rules • mouses • pincers • power drills • power leads • power planers • power routers • putty knives and paint scrapers • saw stools • screwdrivers • small pinch bars • spirit levels • squares (combination/tri) • straight edges • work benches.
Window refurbishment:	• is to include casement and double hung windows • casement windows include hopper and sliding windows • operation can be by spiral balances or by weights and cords.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Materials include:	• cord • glass • hinges • nails • screws • stays • timber • window furniture.
Environmental requirements	• clean-up protection

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RANGE STATEMENT

include:	• noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Window components and furniture includes:	• frame and sash • window furniture, including hinges, cords, weights, spiral balances, locks, stays, winders, handles and knobs.
Frame includes:	• parting beads • pocket pieces • stop beads.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCCA3012A Frame and fit wet area fixtures

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to install supporting framework for fixtures and flashings associated with the wet area construction for a bath, shower base and sink or basin unit, and preparation for wet area linings. It includes bathroom, laundry, shower, toilet and en suite wet areas.

Application of the Unit

Application of the unit

This unit of competency supports achievement of skills to construct framework for wet areas to prepare for installation of plumbed fittings and fixtures, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** for ***planning and preparation*** purposes.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. Plant, ***tools and equipment*** selected to carry out ***wet area*** framing and fitting out are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
	1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
	1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Set out wet area installation.	2.1. Noggings and housings are set out for ***fitments*** and ***fixtures*** in accordance with drawings and specifications.
3. Prepare for bath installation.	3.1. Studs are checked to height and level for required depth to receive lip of bath.
	3.2. Support to front edge of bath is constructed to height and level.
	3.3. Nogging and short studs are fixed and fitted, where specified, flush to wall face for fixing surround sheeting.
	3.4. Sheeting and flashing are fixed to specifications.
4. Prepare for shower base installation.	4.1. Location of shower base is set out.
	4.2. Wall plates and studs are checked out to required depth to receive shower base.
	4.3. Nogging and short studs are fitted and fixed flush to wall face for fixing surround sheeting.
	4.4. Corner flashing is installed to regulations.

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ELEMENT	PERFORMANCE CRITERIA
	4.5. Flashing and sheeting are fitted and fixed to specifications.
5. Prepare for sink installation.	5.1. Noggings are set out to accommodate vanity basin and laundry sink units. 5.2. Flashings are installed in accordance with regulations.
6. Clean up.	6.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 6.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities

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REQUIRED SKILLS AND KNOWLEDGE

- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- capillary action
- construction terminology
- electrolysis and corrosion of dissimilar metals
- framing and fitting wet area fixture techniques
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- plant, tools and equipment types, characteristics, uses and limitation
- processes for setting out and measuring
- processes for the calculation of material requirements
- wall framing
- waterproofing and flashing
- wet area preparation materials
- workplace and equipment safety requirements
- job safety analysis (JSA) and safe work method statements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan, OHS regulations and state and territory legislation applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum set out height and level of one bath and one shower; install one bath and one shower to regulations including all required flashings and noggings for lining requirements
- install the framing for one sink/basin.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the

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EVIDENCE GUIDE

	mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at

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EVIDENCE GUIDE

the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements pertaining to framing and fitting wet area fixtures

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RANGE STATEMENT

	• relevant Australian standards • safe work procedures related to framing and fitting wet area fixtures • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Planning and preparation include:	• work site inspection • equipment defect identification • assessment of conditions and hazards • determination of work requirements • preparation for shower screen installation and variations of wall lining, where specified.

Safety (***OHS***) is to be in accordance with state or territory legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	  • working with dangerous materials
	• organisational first aid
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
	• use of firefighting equipment

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RANGE STATEMENT

	• use of tools and equipment • workplace environment and safety.
Tools and equipment include:	• chisels • clamps • cutting knives • docking saws/drop saws • hammers • hand saws • marking equipment • measuring tapes and rules • mouses • pincers • power drills • power leads • power planers • power routers • putty knives and paint scrapers • saw stools • screwdrivers • small pinch bars • spirit levels • squares (combination/tri) • straight edges • work benches.
Wet areas include:	• bathrooms • en suites • food preparation areas • kitchens • laundries • showers • toilets.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Materials include:	• clouts • flashing material • glues • nails • screws

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RANGE STATEMENT

	• timber • waterproofing agents.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Fitments include:	• grab rails • kitchen sink units • laundry trough units • shaving cabinets • sink units • toilets • towel rails • vanities.
Fixtures include:	• baths checked into wall • free standing baths • shower bases (poly marble, pressed metal or concrete).

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCCA3013A Install lining, panelling and moulding

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to prepare, set out and install lining and panelling to either masonry or timber/metal framed walls. It includes the installation of mouldings to provide decorative finishes.

Application of the Unit

Application of the unit This unit of competency supports achievement of skills for lining, panelling and installing mouldings to walls in a range of construction projects, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** for ***planning and preparation*** purposes.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. Plant, ***tools and equipment*** selected to carry out ***lining*** and ***moulding*** installation tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
	1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
	1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Prepare surface for lining/panelling.	2.1. Fixing procedures for specified lining materials are selected in accordance with specifications.
	2.2. ***Surface*** is set out to provide a balanced panel or board effect to width and height.
3. Install lining/panelling.	3.1. Lining material is marked, cut to length and/or shape, fitted and positioned to specifications.
	3.2. Panelling/lining is secured and fixed to job and manufacturer specifications.
	3.3. Panelling/lining is installed to plumb, level and uniform plane.
4. Cut and fix standard architrave mouldings.	4.1. Standard ***architraves*** for ***edging*** are marked, cut to length, positioned and fitted to specifications.
	4.2. Skirtings are marked, cut to length, positioned and fitted to specifications.
	4.3. Mitre ***joints*** are fitted flush to face and true without gaps.
	4.4. Scribed joints are marked, cut to length, positioned

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ELEMENT	PERFORMANCE CRITERIA
	and fitted to specifications.
	4.5. Scotia return end is cut to profile shape and length as detailed for location in drawings and specifications.
	4.6. Standard pelmet moulding sections are marked to length, cut, fitted and assembled and fixed to specifications with mitres true without gaps.
	4.7. Raked moulding is set out to position and mould is shaped to pattern for each position.
5. Clean up.	5.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	5.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work

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REQUIRED SKILLS AND KNOWLEDGE

- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- commonly used timber profiles
- construction terminology
- geometry for raking mouldings, stairs and roofing
- job safety analysis (JSA) and safe work method statements
- lining, panelling and moulding materials
- lining, panelling and moulding techniques
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- plant, tools and equipment types, characteristics, uses and limitation
- processes for the calculation of material requirements
- quality requirements of lining, panelling and moulding
- workplace and equipment safety requirements.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment	A person who demonstrates competency in this

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EVIDENCE GUIDE

and evidence required to demonstrate competency in this unit	unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan, OHS regulations and state and territory legislation applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools, plant and equipment • communicate and work effectively and safely with others • complete lining one wall to a minimum of 3 metres by 2.4 metres, with lining boards including one opening to specifications • complete lining one wall to a minimum of 3 metres by 2.4 metres, with sheet panelling including one opening to specifications • complete fitting profiled architraves to a minimum of one door or one window or a combination of both, with specified margins and tight fitting mitre joints • complete cutting and fixing a profiled skirting with a minimum of one internal scribed joint and one external mitre joint with tight fitting joints • complete scribing and mitring a Scotia, quad and colonial architrave with a minimum of one internal joint and one external mitre joint with tight fitting joints • construct a pelmet with two return ends able to be fixed and removed upon completion • construct a raking mould using either an internal scribed or external mitre joint with tight fitting joints.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory

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EVIDENCE GUIDE

	or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured

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EVIDENCE GUIDE

learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements

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RANGE STATEMENT

	• plans and specifications • regulatory and legislative requirements pertaining to installing lining, panelling and moulding • relevant Australian standards • safe work procedures related to installing lining, panelling and moulding • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Planning and preparation include:	• work site inspection • equipment defect identification • assessment of conditions and hazards • determination of work requirements.

Safety (***OHS***) is to be in accordance with state or territory legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	  • working with dangerous materials
	• organisational first aid
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices

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RANGE STATEMENT

	• use of firefighting equipment • use of tools and equipment • workplace environment and safety.
Tools and equipment include:	• air compressors and hoses • bevels • chisels • coping saws • corking guns • cramps • hammers • hand planes • hand saws • marking equipment • measuring tapes and rules • moulding planes • nail guns • power drills • power leads • power planers • power saws • rebate planes • routers • saw stools • spirit levels • squares (combination/tri) • straight edges • string lines.
Lining of framed walling or battened surfaces provides a finished surface and includes:	• all moulding applications where joining occurs at surface intersections and involves change of levels and mouldings running at a slope or rake. • junctions of surfaces, which may be at right angles or obtuse or acute angles • lining boards, which may be vertical, horizontal or raked.
Moulding includes:	• beading (flat, quad, cover strips and nosings) • bull nosed • multi-curved • ornate period profile • Scotia • splayed

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RANGE STATEMENT

	• square.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Materials include:	• lining, panelling, mouldings, nails, screws, adhesives and gap fillers • lining and panelling sheet materials, including lining boards, veneer panelling, plywood, hardboard, MDF board, particle board and fibre cement board.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.

Surfaces include:	• floors, walls, ceilings, windows, door frames and jambs, built-in cupboards, built-in robes, fitments and stairs
	• preparation of surfaces may involve:
	  • fixing of battens to surface
	  • trimming of frame members to line
	  • fixing of additional noggings
	  • packing of frame members
	  • wedging of frame members.

Architraves include:	• may incorporate a plinth block.
Edging includes:	• architrave • cornice • raking moulds • skirting.
Joints include:	• butt or moulds (of plastic, metal or timber) incorporated in the joint or surface fixed above the joints.

Unit Sector(s)

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Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCCA3014A Construct bulkheads

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to construct bulkheads to conceal services or for decorative purposes. It includes straight, curved and geometric shaped bulkheads, generally constructed in situ and includes prefabricated fitments.

Application of the Unit

Application of the unit This unit of competency supports achievement of skills to construct non-load bearing bulkheads in a range of construction projects, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Construct bulkheads.	2.1. ***Bulkhead*** is set out to plans and specifications. 2.2. Materials are selected in accordance with plans and specifications. 2.3. Bulkhead trimmers and plates are cut in accordance with set out and job requirements. 2.4. Fasteners are selected ensuring that the method employed is capable of carrying the load of the finished product. 2.5. Bulkhead is assembled and fixed in position to application and requirements for line, level and plumb in construction projects in accordance with job specifications.
3. Clean up.	3.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 3.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- bulkhead construction techniques
- bulkhead materials
- construction terminology
- curved geometry
- framing techniques
- job safety analysis (JSA) and safe work method statements
- load and anchor capacities for bulkheads
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management

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REQUIRED SKILLS AND KNOWLEDGE

- plans, specifications and drawings
- plant, tools and equipment types, characteristics, uses and limitation
- processes for setting out and measuring
- processes for the calculation of material requirements
- quality requirements for bulkheads
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan, OHS regulations and state and territory legislation applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools, plant and equipment • communicate and work effectively and safely with others • construct a segmental curved bulkhead a minimum of 3 metres in radius with a depth of 600mm to plumb, line and level and job specifications.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements

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EVIDENCE GUIDE

- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete

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EVIDENCE GUIDE

confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements pertaining to constructing bulkheads
- relevant Australian standards
- safe work procedures related to constructing

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RANGE STATEMENT

	bulkheads • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Planning and preparation include:	• work site inspection • equipment defect identification • assessment of conditions and hazards • determination of work requirements.

Safety (***OHS***) is to be in accordance with state or territory legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	  • working with dangerous materials
	• organisational first aid
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environment and safety.

Tools and equipment include:	• clamps • compressors

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RANGE STATEMENT

	• crimping tools • docking saws and drop saws • explosive power tools • hammers • laser levelling equipment • levels • marking equipment • masonry drills • measuring tapes and rules • nail guns • pop riveters • power drills • power leads • saw stools • scaffolding • screw guns • spirit levels • squares (combination/tri) • steel squares • straight edges • string lines • templates • tin snips.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Materials include:	• bolts and nuts • masonry anchors • metal • nails and spikes • patented metal fasteners • pop rivets • prefabricated components • rivets • screws • timber.
Environmental requirements include:	• clean-up protection • noise and dust • vibration

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RANGE STATEMENT

	• waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.

Bulkheads:	• include:
	  • decoration, to contain fittings (bar hoods and cupboards) and help facilitate changes in height to ceilings
	  • services
	  • smoke containment
	• may require sound or fire rating
	• may be constructed of metal or timber
	• may be sheeted with plasterboard, lining boards, reconstituted timber products, metal or plastic decorative panels
	• may be hung from the structure above, incorporated into the structure above or fastened to the structure above.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCCA3015A Assemble partitions

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to set out and assemble partitions for the purpose of dividing areas into useable spaces. It includes prefabricated and demountable partitions constructed of timber or metal.

Application of the Unit

Application of the unit This unit of competency supports achievement of skills to construct and install timber or metal partitions in a range of construction projects, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** for ***planning and preparation*** purposes.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
	1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
	1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Set out and cut components.	2.1. Materials are obtained from the store or stack to quantity and specification requirements.
	2.2. Location is ***set out*** and marked for ***partitions*** in accordance with job plan and specifications.
	2.3. One or multiple components are accurately cut to size according to plans and specifications.
	2.4. Prefabricated or cut components are distributed and stacked to suit job location and sequence of construction.
3. Assemble partitions.	3.1. Locations for member connections are marked and prepared to designed measurement spacings.
	3.2. Fixing and fastenings are installed to secure each junction of members tight together, flush on partition face and within ±2mm of set out.
	3.3. Partitions are assembled and secured square and plumb to specification.
4. Clean up.	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.

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ELEMENT	PERFORMANCE CRITERIA
	4.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- application and requirements for line, level and plumb in construction projects
- construction terminology
- fixing and fasteners

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REQUIRED SKILLS AND KNOWLEDGE

- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- partition assembly techniques
- partitioning materials
- plans, specifications and drawings
- processes for setting out
- processes for the calculation of material requirements
- quality requirements of partitions
- types, characteristics, uses and limitations of plant, tools and equipment
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools, plant and equipment • communicate and work effectively and safely with others • set out and assemble a minimum of 9 square metres of full height partitioning, including the set out of a corner which is internal/external and a T intersection, and include a window and door panel to square and plumb in accordance with job specifications.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement

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EVIDENCE GUIDE

- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice,

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EVIDENCE GUIDE

with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements pertaining to assembling partitions

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RANGE STATEMENT

	• relevant Australian standards • safe work procedures related to assembling partitions • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Planning and preparation include:	• work site inspection • equipment defect identification • assessment of conditions and hazards • determination of work requirements.

Safety (***OHS***) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	  • working with dangerous materials
	• organisational first aid
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environment and safety.

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RANGE STATEMENT

Tools and equipment include:	• clamps • compressors • crimping tools • docking saws • drop saws • explosive power tools • hammers • laser levelling equipment • levels and power leads • marking equipment • masonry drills • measuring tapes and rules • nail guns • pop riveters • power drills • saw stools • scaffolding • screw guns • spirit levels • squares (combination/tri) • steel squares • straight edges • string lines • templates • tin snips.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Materials include:	• internal lining • nails, screws, pop rivets and patented fasteners • proprietary partition systems • timber or metal.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.

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RANGE STATEMENT

Set out includes:	• the use and fixing of tracks or plates.

Partitions:	• can be non-structural timber, metal or fire-rated, including:
	  • cladding with plasterboard
	  • fibre cement board
	  • plastic
	  • reconstituted timber products
	• types of partitions include:
	  • pre-glazed panels
	  • lined or unlined door units
	  • modular and custom window units
	  • framed or solid.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCCA3016A Construct timber external stairs

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency specifies the outcomes required to construct and install timber external stairs, that may involve one or more flights, to provide access into a structure. It includes timber treads and stringers.

Application of the Unit

Application of the unit	This unit of competency supports achievement of skills for constructing stairs to external access to a building or construction structure, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Set out and prepare material.	2.1. Exit and ground finish levels are determined from job drawings and site location. 2.2. Rise and going of ***stairs*** are calculated from job drawings, site location and regulations. 2.3. ***Newel posts*** and footings are set out and placed to layout of designed stairs, job drawings and specifications. 2.4. Materials for ***stringers*** are selected and set out to the pitch of stairs with treads and risers according to regulations. 2.5. Stringers are housed to accommodate treads, and risers or metal brackets are fixed to support treads. 2.6. Stringers are cut and housed into newel posts and/or landings where specified. 2.7. Material for treads are selected and risers are set out and cut to length to requirements of stair design.
3. Assemble and erect stairs.	3.1. Strings are located and fixed into position. 3.2. Landing is constructed where specified.

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ELEMENT	PERFORMANCE CRITERIA
	3.3. Treads and ***risers*** are fixed to the stringers.
	3.4. Tie bolts are located and secured to maintain stair width where specified.
	3.5. Bracing and lateral ties are fixed to newels in accordance with specifications to maintain rigidity of stair structure where specified.
4. Fit handrails, balustrade and finish.	4.1. Material for handrails and balusters are marked and cut to length.
	4.2. ***Handrails and balusters*** are fitted and fixed in accordance with regulations.
	4.3. Non-slip strips are installed to treads, where specified.
5. Clean up.	5.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	5.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - report faults
  - use language and concepts appropriate to cultural differences

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REQUIRED SKILLS AND KNOWLEDGE

- use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- application and requirements for line, level and plumb in construction projects
- construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- plant, tools and equipment types, characteristics, uses and limitation
- processes for setting out and measuring
- processes for calculating material requirements
- quality requirements of timber stairs
- stair building materials
- stair construction techniques
- stair types
- stair regulations
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan, OHS regulations and state and territory legislation applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- complete the setting out and construction of full size stairs (free standing or against a wall), including a landing, handrail and balustrade to a minimum height of 1.2 metres, in accordance with regulations.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the

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EVIDENCE GUIDE

	mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at

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EVIDENCE GUIDE

the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements pertaining to constructing timber external stairs

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RANGE STATEMENT

	• relevant Australian standards • safe work procedures related to constructing timber external stairs • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Planning and preparation include:	• work site inspection • equipment defect identification • assessment of conditions and hazards • determination of work requirements.

Safety (***OHS***) is to be in accordance with state or territory legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	  • working with dangerous materials
	• organisational first aid
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environment and safety.

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RANGE STATEMENT

Tools and equipment include:	• clamps • compressors • crimping tools • docking saws • drop saws • explosive power tools • hammers • laser levelling equipment • levels and power leads • marking equipment • masonry drills • measuring tapes and rules • nail guns • pop riveters • power drills • saw stools • scaffolding • screw guns • spirit levels • squares (combination/tri) • steel squares • straight edges • string lines • templates • tin snips.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Materials include:	• anti-slip products • coach screws • masonry anchors • metal brackets • patented metal fasteners and connectors • steel tie rods • timber and nails, including bolts and nuts • wall plugs.
Environmental requirements include:	• clean-up protection • noise and dust • vibration

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RANGE STATEMENT

	• waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Stairs:	• may be constructed with housed stringers or metal brackets to accommodate treads • can be between ground level and landing, landing and landing, and free standing or against a wall.
Newel posts and handrails may be:	• metal • timber.
Stringers can be:	• open • housed.
Risers can be:	• open • closed.
Handrails and balusters include:	• handrail and balusters fixed to face of newels • handrails mortised into newels • parallel railing fixed to face of newels.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCCA3017B Install exterior cladding

Modification History

Photovoltaic (solar) panels added to range statement
Equivalent to CPCCCA3017A

Unit Descriptor

This unit of competency specifies the outcomes required to install material finishes applied to an external framed wall surface for the purpose of weatherproofing and securing the building. It includes sheet material, weatherboarding of timber, plastic, metal and fibre cement sheet.

Application of the Unit

This unit of competency supports achievement of skills of applying material finishes to weatherproof a building in a range of construction projects, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where ***bold italicised text*** is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare	1.1	Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** for ***planning and preparation*** purposes.
		1.2	***Safety (OHS)*** requirements are followed in accordance with safety plans and policies.
		1.3	Signage and barricade requirements are identified and implemented.
		1.4	Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
		1.5	Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
		1.6	***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
		1.7	***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2	Straighten and prepare exterior walls	2.1	Timber frame is checked for straightness and studs are trimmed or packed to provide true surface across studs.
		2.2	Additional rows of nogging are fitted and fixed to line, flush with wall face and plumb, where specified to facilitate ***exterior cladding***.

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3	Fix edge finishing, flashing and insulation	3.1	***Weatherproofing, vapour barrier and flashing*** material are cut and fitted into position and secured to specifications.
		3.2	Location of edge finishing, joiners, corner moulds and flashing is prepared to length and position, and secured to specifications.
		3.3	Wall insulation is cut and fixed where specified.
4	Set out, cut and fix horizontal weatherboards	4.1	Cover for ***weatherboards*** is determined from recommended lap, type and profile of board and height of wall.
		4.2	Gauge rod is produced.
		4.3	Stop locations of each board or starting board are marked on face to determined or specified position.
		4.4	Boards are cut to fit length of wall faces.
		4.5	Butt joints of timber boards are joined at centre of studs with joint flush to face and line.
		4.6	Other boards are joined using manufacturer recommended joining profiles and fitted to specification.
		4.7	Material is pre-drilled subject to splitting, and fixed at end junction or butt joints to avoid splitting.
		4.8	Internal and external corners are finished to manufacturer recommendations and job specifications.
		4.9	Timber weatherboards, where specified, are prepared with nominated primer to cover overlaps and end joints.
5	Fix panelling	5.1	Starting position of first panel is determined in accordance with specified design and finished effect against windows, doors and corners.
		5.2	Panelling is cut to fit height of wall.
		5.3	Abutting joints of panelling are fixed to manufacturer specification and requirements for covering flashing.

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		5.4	Panelling is cut, fitted and fixed to manufacturer recommendations and job specification, maintaining plumb and level.
6	Clean up	6.1	Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
		6.2	Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- construction terminology
- exterior cladding materials and techniques
- flashing and sarking
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- plant, tools and equipment types, characteristics, uses and limitation
- processes for the calculation of material requirements
- quality requirements of exterior cladding

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- safe use of scaffolding
- wall frame construction
- workplace and equipment safety requirements.

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan, OHS regulations and state and territory legislation applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools, plant and equipment • communicate and work effectively and safely with others • produce a storey/set out rod for a full height wall using a weatherboard of a given profile or end cover • fix weatherboards to a height of at least six rows, incorporating an internal and external corner with stops, together with flashings and sarking for a window and a door • install a minimum of two different types of panels, incorporating an internal and external corner with stops, vertical and horizontal joints, together with

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flashings and sarking for a window and a door.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and

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environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements

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- plans and specifications
- regulatory and legislative requirements pertaining to installing exterior cladding
- relevant Australian standards
- safe work procedures related to installing exterior cladding
- signage
- verbal or written and graphical instructions
- work bulletins
- work schedules.

Planning and preparation include:

- work site inspection
- equipment defect identification
- assessment of conditions and hazards
- determination of work requirements.

Safety (OHS) is to be in accordance with state or territory legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- handling of materials
- hazard control
- hazardous materials and substances
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - personnel
  - photovoltaic (solar) panels
  - power cables, including overhead service trays, cables and conduits
  - restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working with dangerous materials
- organisational first aid
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices

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- use of firefighting equipment
- use of tools and equipment
- workplace environment and safety.

Tools and equipment include:

- air compressors and hoses
- angle grinders
- chalk lines
- chisels
- fibre cement sheet cutters
- hammers
- hand saws
- levelling equipment
- marking equipment
- measuring tapes and rules
- nail bags
- nail guns
- power drills
- power leads
- power planers
- power saws
- power screwdrivers
- saw stools
- scaffolding
- spanners
- spirit levels
- squares (combination/tri)
- string lines
- tin snips.

Quality requirements include relevant regulations, including:

- Australian standards
- internal company quality policy and standards
- manufacturer specifications, where specified
- workplace operations and procedures.

Materials include:

- aluminium weatherboards
- chamfer boards
- fibre cement sheet panels, sheets and planks
- flashing and sarking
- manufactured cladding materials (strips, sheets, boards and planks)

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- metal panelling
- nails and screws
- patented metal fasteners, clips and joiners
- primer
- reconstituted timber products
- tempered hardboard strips
- timber weatherboards
- tongue and grooved timber boards
- vinyl weatherboards and cladding.

Environmental requirements include:

- clean-up protection
- noise and dust
- vibration
- waste management.

Statutory and regulatory authorities include:

- federal, state and local authorities administering applicable Acts, regulations and codes of practice.

Exterior cladding includes:

- fibre cement sheet
- hardboard
- metal
- plastic
- roof sheeting
- timber.

Weatherproofing, vapour barrier and flashing are in accordance with:

- manufacturer specifications
- regulations.

Weatherboards:

- may be fixed horizontal, vertical, diagonal or raked
- internal/external corners and joints between boards can be determined by the material being used, manufacturer recommendations and job specifications
- effective cover of weatherboard is determined by weatherboard profile or type
- gauge rod is to be used for weatherboard set out.

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Unit Sector(s)

Functional area

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCCA3018A Construct, erect and dismantle formwork for stairs and ramps

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to construct, erect and dismantle formwork for stairs and ramps to form up the concrete that may involve one or more flights in order to provide access between floors and/or landings. It includes timber, metal or prefabricated formwork.

Application of the Unit

Application of the unit

This unit of competency supports achievement of skills to construct basic formwork for a variety of materials for pouring of concrete stairs in a range of construction projects, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Set out formwork.	2.1. Design of ***stairs and/or ramps*** and method of joining ***formwork*** are identified from job drawings and specifications, and are checked to be in accordance with legislation, regulations and codes of practice. 2.2. Exit and ground finish levels are determined from plans, specifications and site inspection. 2.3. Rise, going and pitch of stairs and ramp are determined from plans, specifications, site inspection, rise measurements and requirements of Building Code of Australia (BCA). 2.4. Full size set out of stairs and ramp is ***calculated*** and made to determine rise, going and pitch of stairs to provide location of landings, stringers, treads and posts where specified. 2.5. Location of stair, ramp and newels are determined from plans, specifications and pitch of stairs or full size set out. 2.6. Location of footings are set out to layout of designed stairs and ramp from plans, specifications or full size

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ELEMENT	PERFORMANCE CRITERIA
	set out, where specified.
	2.7. Materials for formwork, including stringers, are selected and set out to pitch of stairs with rises not exceeding specified space between treads.
3. Assemble and erect formwork.	3.1. Landing bearers and joists are placed, fixed and braced according to plans and specifications, where specified.
	3.2. Footings are checked for accuracy to requirements of plans and specifications.
	3.3. Stairs and/or ramp formwork soffit is erected and braced in accordance with plans and specifications.
	3.4. Formwork stringers are cut square to length and shape in accordance with set out and junction with newel posts, and are installed and braced.
	3.5. Metal angle brackets are screwed/bolted to formwork strings to set out locations of tread support.
	3.6. Formwork strings for stairs and ramps are located and fixed according to plans and specifications.
	3.7. Material for face of treads is set out, cut square to length and fixed to metal angle bracket according to plans and specifications.
	3.8. Risers are braced at mid-span to prevent deflection under the load of wet concrete.
	3.9. Newels are erected and temporarily braced to plumb position, where specified.
	3.10. Formwork tie bolts are located and secured to plans and specifications to maintain stair width where specified.
4. Strip formwork.	4.1. Formwork and bracing are removed sequentially and safely.
	4.2. Timber components are de-nailed, cleaned and stored or stacked safely for reuse or removal from site.
	4.3. Steel components are cleaned, oiled and stored or stacked to manufacturer's maintenance recommendations.
	4.4. Damaged formwork components are safely discarded after stripping.
5. Clean up.	5.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.

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ELEMENT	PERFORMANCE CRITERIA
	5.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- application and requirements for line, level and plumb in construction projects
- construction terminology
- formwork materials and techniques

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REQUIRED SKILLS AND KNOWLEDGE

- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- plant, tools and equipment types, characteristics, uses and limitation
- processes for setting out and measuring
- processes for calculating material requirements
- quality requirements for formwork for stairs and ramps
- regulations on stair construction for safe use, including disability access
- stair and ramp construction
- workplace and equipment safety requirements.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan, OHS regulations and state and territory legislation applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools, plant and equipment • communicate and work effectively and safely

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EVIDENCE GUIDE

	with others • complete a site assessment to determine levels and stair dimensions • apply the height and going of stairs to construct, erect and dismantle the formwork for a flight of stairs (free standing or against a wall), including a landing, with a minimum rise of flight of 1800mm • complete the construction, erection and dismantling of a ramp with a rise of 400mm.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package

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EVIDENCE GUIDE

- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

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RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements pertaining to constructing, erecting and dismantling formwork for stairs and ramps
- relevant Australian standards
- safe work procedures related to constructing, erecting and dismantling formwork for stairs and ramps
- signage
- verbal or written and graphical instructions
- work bulletins
- work schedules.

Planning and preparation include:

- work site inspection
- equipment defect identification
- assessment of conditions and hazards
- determination of work requirements.

Safety (***OHS***) is to be in accordance with state or territory legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- handling of materials
- hazard control
- hazardous materials and substances
- organisational first aid
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices

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RANGE STATEMENT

	• traffic control • use of firefighting equipment • use of tools and equipment • work site visitors and the public • working at heights • working in proximity to others • workplace environment and safety.
Tools and equipment include:	• air compressors and hoses • automatic levels • chisels • explosive power tools • grinders • hammers • hand saws • laser levels • marking equipment • measuring tapes and rules • nail bags • nail guns • optical levelling equipment • pinch bars • power drills • power leads • power saws • props • saw stools • scaffolding • shovels • spanners • spirit levels • squares (combination/tri) • steel squares and bevels • string lines.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Materials include:	• bolts and nuts • boxing (either timber, metal, masonry, fibre cement sheeting and reconstituted timber

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RANGE STATEMENT

	products) • coach screws • masonry anchors • metal brackets • nails and spikes • patented metal fasteners • steel tie rods.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Stairs and/or ramps include:	• either free standing or against a wall, including within a stairwell and incorporating structural steel for support of newels, handrails and landings • may be straight, curved or geometrical.
Formwork:	• includes prefabricated or in situ, but is to be rigid to withstand the mass of wet concrete and actions imposed during placement • for construction of formwork it is critical to comply with regulations and specifications for height, level and loadings • includes timber, metal and can use prefabricated components.
Calculated:	• can be using simple mathematics or trigonometry.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCCA3019A Erect and dismantle formwork to suspended slabs, columns, beams and walls

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to erect and dismantle formwork to suspended slabs, columns, beams and walls to contain concrete in above ground construction. It includes timber, metal or prefabricated formwork of modular or in situ design.

Application of the Unit

Application of the unit

This unit of competency supports achievement of skills for erecting and taking down formwork to place concrete for slabs, walls, columns and beams above ground in a range of construction projects, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Erect formwork.	2.1. Work area is cleared and surface prepared for safe erection of ***formwork*** for suspended slabs, ***piers*** and shutters. 2.2. Formwork is set out to requirements of plans and specifications. 2.3. Formwork is assembled to plans, specifications and class of ***surface finish***, with support system set to correct height level and line. 2.4. Bracing of formwork is placed according to support plans and specifications to maintain rigidity and stability. 2.5. Formwork support system is sequentially erected according to initial set out to job specifications. 2.6. Formwork ***shutters*** and/or edge boxing is constructed to designed form requirements and specified dimensions. 2.7. ***Block-outs and cast-in services*** are installed to specified locations. 2.8. Debris, sawdust and other waste materials are

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ELEMENT	PERFORMANCE CRITERIA
	removed from completed formwork in accordance with waste management policy for the site.
	2.9. Release agent is applied to formwork face to manufacturer specifications where specified.
3. Strip formwork.	3.1. Formwork and bracing/strutting support are removed sequentially and safely.
	3.2. Timber components are de-nailed, cleaned and stored or stacked safely for reuse or removal from site.
	3.3. Steel components are cleaned, oiled and stored or stacked to manufacturers' maintenance recommendations.
	3.4. Damaged formwork components are safely discarded after stripping.
4. Clean up.	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	4.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - report faults

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REQUIRED SKILLS AND KNOWLEDGE

- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- application and requirements for line, level and plumb in construction projects
- concrete properties
- construction terminology
- formwork materials and techniques
- hydraulic pressures applied to formwork
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- plant, tools and equipment types, characteristics, uses and limitation
- processes for setting out and measuring
- processes for calculating material requirements
- purpose, application and properties of commonly used release agents
- quality requirements of formwork to suspended slabs, columns, beams and walls
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan, OHS regulations and state and territory legislation applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools, plant and equipment • communicate and work effectively and safely with others • set out and erect suspended slab formwork (slab size a minimum of 30 square metres), incorporating a beam and two different types of columns with a specified formwork system at a minimum height of 2.4 metres.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the

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EVIDENCE GUIDE

	mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at

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EVIDENCE GUIDE

the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements pertaining to erecting and dismantling formwork to suspended slabs, columns, beams

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RANGE STATEMENT

	and walls • relevant Australian standards • safe work procedures related to erecting and dismantling formwork to suspended slabs, columns, beams and walls • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Planning and preparation include:	• work site inspection • equipment defect identification • assessment of conditions and hazards • determination of work requirements.

Safety (***OHS***) is to be in accordance with state or territory legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • personnel
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working with dangerous materials
	• organisational first aid
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
	• use of firefighting equipment

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RANGE STATEMENT

	• use of tools and equipment • workplace environment and safety.
Tools and equipment include:	• air compressors and hoses • automatic levels • chisels • hammers • hand saws • ladders and scaffolding • marking equipment • measuring tapes and rules • nail bags • nail guns • pinch bars • power drills • power grinders • power leads • power saws • proprietary formwork equipment • saw stools • shovels • spanners • spirit levels • squares (combination/tri) • steel squares • string lines.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.

Materials include:	• formwork componentry, including:
	  • bolts and nuts
	  • coach screws
	  • masonry anchors
	  • metal brackets
	  • nails and spikes
	  • patented metal fasteners
	  • steel tie rods
	  • timber.

Environmental requirements	• clean-up protection

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RANGE STATEMENT

include:	• noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Formwork:	• includes prefabricated or in situ, but is to be rigid to withstand the mass of wet concrete and actions imposed during placement • for construction of formwork it is critical to comply with regulations and specifications for height, level and loadings • includes timber, metal and prefabricated components.
Piers include:	• cardboard • metal • timber.
Surface finish can be:	• plain or decorative, with quality applicable to its application.
Shutters include:	• can be timber or metal.
Block-outs and cast-in services:	• make provision for services by other contractors • may be construction of timber, metal, styrene foam or prefabricated.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCCA3020A Erect and dismantle jump form formwork

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to erect and dismantle jump form formwork to form wall structures where the formwork process is continuous. It includes curved or straight jump form formwork.

Application of the Unit

Application of the unit

This unit of competency supports achievement of skills to erect and take down jump form formwork for placing concrete in a range of construction projects. Jump form formwork requires work as a member of a mixed trades team, including carpenters, riggers, electricians, concreters and steel fixers.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Set out formwork.	2.1. Set out points and lines are located according to engineer's drawings, survey datum points and site plan for ***formwork*** erection. 2.2. ***Jump form formwork*** positioning is located to predetermined set out.
3. Assemble core form system.	3.1. Internal prefabricated system wall form shutters are erected and fixed into location according to engineer's drawings. 3.2. System is fitted to concrete nib walls to heights consistent with engineer's requirements. 3.3. Shear key feet are installed to manufacturer specifications. 3.4. Platforms and assembly are fitted into core to manufacturer specifications. 3.5. Structural steel system grid work and hydraulic hose lines are fitted according to manufacturer specifications. 3.6. Wall form shutters are suspended and system cladding and platforms are fitted and completed

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ELEMENT	PERFORMANCE CRITERIA
	according to manufacturer specifications and engineer's requirements.
4. Locate and install penetrations.	4.1. Locations and dimensions of penetrations are set out in accordance with designated tolerance from engineering drawings.
	4.2. ***Penetrations***, ***block-outs and cast-in services*** are constructed where required to engineering drawings.
	4.3. Penetrations are installed to requirements of engineering drawings.
5. Conduct jump system.	5.1. External prefabricated system wall shutters are erected and fixed to engineer's and manufacturer specifications.
	5.2. Shutters are loosened and stripped according to manufacturers' and OHS requirements.
	5.3. Rigger is communicated with to activate electrical/hydraulic jacking of the system to the new position.
	5.4. Trailing platforms are installed to engineer's specifications.
	5.5. Formwork is dismantled in accordance with manufacturer and engineer's specifications.
6. Clean up.	6.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	6.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements

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REQUIRED SKILLS AND KNOWLEDGE

- enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
- follow instructions
- read and interpret:
  - documentation from a variety of sources
  - plans, specifications and drawings
- report faults
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication, such as hand signals

- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- common formwork faults, problems and suitable rectifications
- concrete characteristics and properties in formwork
- construction terminology
- electrical/hydraulic jacking systems
- formwork materials and techniques
- hydraulic pressures applied to formwork
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- plant, tools and equipment types, characteristics, uses and limitation
- processes for the calculation of material requirements
- quality requirements for jump form formwork
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan, OHS regulations and state and territory legislation applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools, plant and equipment • communicate and work effectively and safely with others • complete, as part of a team, the erection and dismantling of jump form formwork for one operation.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions

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EVIDENCE GUIDE

- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability

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EVIDENCE GUIDE

and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements pertaining to erecting and dismantling jump form formwork
- relevant Australian standards
- safe work procedures related to erecting and

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RANGE STATEMENT

	dismantling jump form formwork • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Planning and preparation include:	• work site inspection • equipment defect identification • assessment of conditions and hazards • determination of work requirements.

Safety (***OHS***) is to be in accordance with state or territory legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • personnel
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working with dangerous materials
	• organisational first aid
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environment and safety.

Tools and equipment include:	• air compressors and hoses • chisels

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RANGE STATEMENT

	• hammers • levelling equipment • measuring tapes and rules • nail bags • pneumatic wrenches • power drills • power leads • proprietary jump form formwork • spanners • spirit levels.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Materials include:	• formwork system components and bolts.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Formwork:	• includes prefabricated or in situ, but is to be rigid to withstand the mass of wet concrete and actions imposed during placement • for construction of formwork it is critical to comply with regulations and specifications for height, level and loadings • includes timber, metal and includes prefabricated components.
Jump form formwork:	• is formwork which is initially erected and then moved (jumped) up to its next position as a whole system • may apply to cores, walls, silos, chimneys or lift shafts.
Penetrations, block-outs and cast-in services:	• make provision for services by other contractors • may be construction of timber, metal, styrene foam or prefabricated.

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Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCCA3021A Erect and dismantle slip form formwork

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to erect and dismantle slip form formwork to form wall structures where the formwork process is continuous. It includes curved or straight slip form formwork.

Application of the Unit

Application of the unit This unit of competency supports achievement of skills for erecting and taking down slip form formwork for placing of concrete in a range of construction projects. Slip form formwork requires work as a member of a mixed trades team, including carpenters, riggers, electricians, concreters and steel fixers.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Set out formwork.	2.1. Set out points and lines are located according to engineer's drawings, survey datum points and site plan for ***formwork*** erection. 2.2. ***Slip form formwork*** positioning is located to predetermined set out.
3. Assemble core form system.	3.1. Internal prefabricated system wall form shutters are erected and fixed into location according to engineer's drawings. 3.2. System is fitted to concrete nib walls to heights consistent with engineer's requirements. 3.3. Shear key feet are installed to manufacturer specifications. 3.4. Platforms and assembly are fitted into core to manufacturer specifications. 3.5. Structural steel system grid work and hydraulic hose lines are fitted to manufacturer specifications. 3.6. Wall form shutters are suspended and system cladding and platforms are fitted and completed to manufacturer specifications and engineer's

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ELEMENT	PERFORMANCE CRITERIA
	requirements.
4. Locate and install penetrations.	4.1. Locations and dimensions of penetrations are set out in accordance with designated tolerance from engineering drawings. 4.2. ***Penetrations***, ***block-outs and cast-in services*** are constructed where required to engineering drawings. 4.3. Penetrations are installed to requirements of engineering drawings.
5. Conduct slip system.	5.1. External prefabricated system wall shutters are erected and fixed to engineer's and manufacturer specifications. 5.2. Shutters are loosened and stripped according to manufacturer's and OHS requirements. 5.3. Rigger is communicated with to activate electrical/hydraulic jacking of the system to the new position. 5.4. Trailing platforms are installed to engineer's specifications. 5.5. Formwork is dismantled in accordance with manufacturer and engineer's specifications.
6. Clean up.	6.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 6.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and

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REQUIRED SKILLS AND KNOWLEDGE

  - confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- common formwork faults, problems and suitable rectifications
- concrete properties
- construction terminology
- electrical/hydraulic jacking systems
- formwork materials and techniques
- hydraulic pressures applied to formwork
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- plant, tools and equipment types, characteristics, uses and limitation
- processes for the calculation of material requirements
- quality requirements for slip form formwork
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan, OHS regulations and state and territory legislation applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools, plant and equipment • communicate and work effectively and safely with others • complete, as part of a team, the erection and dismantling of the slip form formwork for one operation.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions

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EVIDENCE GUIDE

- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability

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EVIDENCE GUIDE

and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements pertaining to erecting and dismantling slip form formwork
- relevant Australian standards
- safe work procedures related to erecting and

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RANGE STATEMENT

	dismantling slip form formwork • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Planning and preparation include:	• work site inspection • equipment defect identification • assessment of conditions and hazards • determination of work requirements.

Safety (***OHS***) is to be in accordance with state or territory legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • personnel
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working with dangerous materials
	• organisational first aid
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environment and safety.

Tools and equipment include:	• air compressors and hoses • chisels

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RANGE STATEMENT

	• hammers • levelling equipment • measuring tapes and rules • nail bags • pneumatic wrenches • power drills • power leads • proprietary slip form formwork • spanners • spirit levels.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Materials include:	• formwork system components and bolts.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Formwork:	• includes prefabricated or in situ, but is to be rigid to withstand the mass of wet concrete and actions imposed during placement • for construction of formwork it is critical to comply with regulations and specifications for height, level and loadings • includes timber, metal and includes prefabricated components.
Slip form formwork:	• is formwork which is initially erected and then continuously moved (slipped) up to its eventual completion point as a whole system • may apply to cores, walls, silos, chimneys or lift shafts.
Penetrations, block-outs and cast-in services:	• make provision for services by other contractors • may be construction of timber, metal, styrene foam or prefabricated.

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Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCCA3022A Install curtain walling

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to fit and fix curtain walling facades to multi-storey structures to provide external cladding of structural steel or reinforced concrete. It includes fabricated frameworks with metal cladding, fabricated framework with glass panels, pre-cast concrete panels, and manufactured and natural stone products in or on the structure.

Application of the Unit

Application of the unit

This unit of competency supports achievement of skills fabricating and installing curtain walling framework to facilitate cladding a building surface with a variety of cladding materials, such as metal, glass, pre-cast concert and stone. Work is to be carried out with others and as a member of a team situation working with other trades, including carpenters, riggers, crane operators, concreters and steel fixers.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Prepare site for installation.	2.1. Location of ***curtain wall installation*** connections are set out to job drawings and specifications. 2.2. Area below construction face is cleared and isolated with designed barricade to OHS regulations and job work plans allowing for ***support plant and equipment***. 2.3. Surface of structure to receive curtain walling is inspected for conformity and surface is prepared to receive fixings according to job drawings and specifications.
3. Install curtain walling.	3.1. ***Curtain wall fixing*** brackets are checked or installed to set out points in accordance with manufacturer specifications and site structural drawings. 3.2. Curtain walling is located and fixed into correct position in accordance with job drawings, after being raised to location by crane operations. 3.3. Curtain walling is installed plumb and level and aligned and finally fixed into position in accordance with specifications.

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ELEMENT	PERFORMANCE CRITERIA
	3.4. Junctions between placed sections of curtain walling are fitted and secured to fixing specifications.
	3.5. Curtain wall trims are installed in accordance with manufacturer specifications and detail drawings, where applicable.
4. Seal curtain walling.	4.1. Surface areas are cleaned in preparation for application of caulking sealants.
	4.2. Sealants are applied to curtain walling and trims, where specified, in accordance with job specifications.
5. Clean up.	5.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	5.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations

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REQUIRED SKILLS AND KNOWLEDGE

- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- construction terminology
- curtain walling materials, systems and techniques
- fall arrest system
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- processes for the calculation of material requirements
- purpose and safe use of swing scaffolding
- quality requirements for curtain walling
- slings, clutches and other applicable lifting equipment
- tools and equipment types, characteristics, uses and limitation
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan, OHS regulations and state and territory legislation applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools and equipment • communicate and work effectively and safely with others • complete external surface preparation to receive fixings that are checked for conformity with tolerances for plumb and line • install check, place, fix and seal sections of curtain walling for a multi-storey project.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements

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EVIDENCE GUIDE

- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete

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EVIDENCE GUIDE

confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements pertaining to installing curtain walling
- relevant Australian standards
- safe work procedures related to installing

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RANGE STATEMENT

	curtain walling • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Planning and preparation include:	• work site inspection • equipment defect identification • assessment of conditions and hazards • determination of work requirements.

Safety (***OHS***) is to be in accordance with state or territory legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • personnel
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working with dangerous materials
	• organisational first aid
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environment and safety.

Tools and equipment include:	• caulking guns • explosive power tools

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RANGE STATEMENT

	• fall arrest systems • hammers • levelling equipment • measuring tapes and rules • power drills • power grinders • power leads • spanners • spirit levels • squares (combination/tri) • wedges.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Materials include:	• curtain wall components and combinations thereof.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Curtain wall installation includes:	• fabricated framework with glass panels • fabricated framework with metal cladding • manufactured and natural stone products • pre-cast concrete panels • types of structural frames, including structural steel, in situ reinforced concrete and pre-cast concrete.
Support plant and equipment includes:	• compressors • cranes • elevated work platforms • hoses and fittings • scaffolding • welding equipment • winches.
Curtain wall fixing includes:	• drilling holes • fixing brackets to steelwork

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RANGE STATEMENT

- installing masonry anchors
- trimming concrete surfaces for flatness.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCCA3023A Carry out levelling operations

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to conduct levelling procedures using the rise and fall method and the height of instrument method for the purpose of establishing correct and accurate set out of buildings, their components and preparation. It includes the set up, testing and use of levelling devices and undertaking closed traverses using a range of levelling equipment.

Application of the Unit

Application of the unit

This unit of competency supports achievement of skills to accurately use a variety of levelling devices commonly used in the construction industry to establish accurate set out data for a range of construction projects, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units	CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information***. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Conduct levelling procedures using rise and fall method.	2.1. Instrument is accurately set up and tested for operation before commencing ***levelling activities***. 2.2. Datum point is set up or located. 2.3. Readings are taken to datum and at nominated or selected stations, to project specifications. 2.4. Backsights, intermediate sights and foresights are identified and levels are booked. 2.5. Instrument is transferred to another location and the process is repeated to project specifications. 2.6. Accuracy of readings is established using rise and fall method of calculation. 2.7. Reduced levels for all stations are identified from the level book calculations.
3. Conduct levelling procedures using height of instrument method.	3.1. Instrument is accurately set up and tested for operation before ***levelling***, including ***levelling equipment/device tolerance checks***. 3.2. Datum point is set up or located. 3.3. ***Level readings*** are taken to datum and the interim

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ELEMENT	PERFORMANCE CRITERIA
	reduced level is established.
	3.4. Readings are taken at nominated or selected stations to project specifications.
	3.5. Instrument is transferred to another location and the process is repeated to project specifications.
	3.6. Reduced levels are calculated using height of instrument method.
	3.7. Reduced levels for all stations are identified from the calculations and ***heights and levels recorded***.
4. Calculate distances using stadia lines.	4.1. Cross hair readings are checked for accuracy using stadia lines.
	4.2. Distances are calculated from instrument to stations using staff, stadia lines and identified factor of the levelling instrument.
5. Clean up.	5.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	5.2. Tools and equipment are cleaned, checked, ***levelling devices maintained*** and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- basic levelling
- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources

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REQUIRED SKILLS AND KNOWLEDGE

    - plans, specifications and drawings
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- application and requirements for line, level and plumb in construction projects
- basic construction and levelling processes
- construction plan, symbols and construction terminology
- construction terminology
- job safety analysis (JSA) and safe work method statements
- levelling device types, characteristics, technical capabilities and limitations
- levelling techniques commonly used in construction work
- processes for interpreting engineering drawings and sketches
- processes for setting out
- project quality requirements
- site and equipment safety (OHS) requirements
- site isolation and traffic control responsibilities and authorities.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan, OHS regulations and state and territory legislation applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools and equipment • communicate and work effectively and safely with others • set up and test levelling equipment • transfer levels and record differences in height undertaking a closed traverse using both the rise and fall method and the height of instrument method on a minimum of three projects • confirm accuracy of the readings taken, including set up and movement of device in two locations • accurately record the results of each levelling procedure to organisational requirements • calculate distances using an optical levelling instrument and levelling staff.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge

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EVIDENCE GUIDE

will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the

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EVIDENCE GUIDE

workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS

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RANGE STATEMENT

	• organisation work specifications and requirements • plans and specifications • regulatory and legislative requirements pertaining to the conduct of basic demolition processes • relevant Australian standards • safe work procedures related to the conduct of basic demolition processes • signage • verbal or written and graphical instructions • work bulletins • work schedules.

Safety (***OHS***) is to be in accordance with state or territory legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • personnel
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working with dangerous materials
	• organisational first aid
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
	• use of firefighting equipment
	• use of tools and equipment

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RANGE STATEMENT

	• workplace environment and safety.
Tools and equipment include:	• automatic level and levelling staff • bolt cutters • chalk lines • hammers • laser levels • laser targets • marking equipment • measuring tapes and rules • plumb bobs • saw stools • saws • signage for laser levelling • spirit levels and straight edges • string lines • water levels • wooden and steel pegs.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Environmental requirements include:	• clean-up management • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Levelling activities include:	• approximate distances and the transfer of the data points • location of services • positioning offsets and recovery pegs for construction projects or for use in determining quantity from calculations. • recording ground levels at respective critical set out points • recording heights or levels • recording slab or pad levels for placement of steel columns or masonry piers • recording or checking levels in drainage • setting up devices • shooting levels for concrete slabs

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RANGE STATEMENT

	• shooting levels for excavation/footings • sloping blocks • transferring levels/heights for formwork • those undertaken in a team arrangement.
Levelling procedures include:	• closed traverse.
Levelling equipment/device tolerance checks include:	• a two peg test for automatic level • reverse readings for spirit level.
Level readings include:	• datum backsight, foresight and intermediate sight from stations with known or unknown reduced levels, using height of instrument and rise and fall calculations.
Heights and levels recorded may be by:	• chalk or nail mark • datum/survey peg • drawing or sketch • marks on vertical surface • verbal or written instructions.

Levelling devices maintained:	• include:
	  • authorised servicing
	  • cleaning
	  • monitoring, recording and reporting faults
	• may include the conduct of authorised minor replacements.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

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Functional area

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CPCCCM1011A Undertake basic estimation and costing

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to estimate materials, labour and time requirements and establish costs for a basic construction project.

Application of the Unit

Application of the unit This unit supports the attainment of basic understanding and application of construction estimating and costing.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Gather information.	1.1. Details of project requirements are obtained from ***information*** supplied for ***planning and preparation*** of ***estimating and costing***. 1.2. Details of products and services to be provided are compiled. 1.3. Delivery point and methods of transportation are determined where necessary. 1.4. Details are recorded in accordance with enterprise practice.
2. Estimate materials, time and labour.	2.1. Types, quantities and ***quality requirements*** of ***materials*** required for the construction project are estimated, including meeting ***environmental requirements***. 2.2. Labour requirements to achieve construction outcomes and/or perform required services are estimated. 2.3. Time requirements to construct and/or perform required services are estimated.
3. Calculate costs.	3.1. Total materials, labour and overhead cost allowances are calculated in accordance with enterprise procedures. 3.2. Total job cost is calculated, including overheads and mark-up percentages. 3.3. Final cost is calculated.
4. Document details and verify where necessary.	4.1. Details of costs and charges are documented in accordance with enterprise practice. 4.2. Costs, calculations or other details are verified in accordance with enterprise practice. 4.3. Details are documented for future reference in accordance with enterprise practice.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

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REQUIRED SKILLS AND KNOWLEDGE

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record details of project, including costs and charges
- numeracy skills to apply calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- construction materials
- construction terminology
- costing techniques and procedures
- job safety analysis (JSA) and safe work method statements
- labour rates and overheads
- material sizes
- plans, specifications and drawings
- processes for calculating material requirements
- quality requirements
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools and equipment
- communicate and work effectively and safely with others
- document and communicate work-related information, including work orders, specifications, products, materials and labour requirements, costing calculations for products, materials and labour, and special conditions for a specified construction project
- estimate and cost a specified project, including:
  - estimate quantities of material required
  - determine types and amount of labour required to complete the work
  - estimate time required to complete the work
  - estimate overheads associated with the project.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements

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EVIDENCE GUIDE

and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

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- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions

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RANGE STATEMENT

	where specified • material safety data sheets (MSDS) • memos • organisation work specifications and requirements • plans and specifications • relevant Australian standards • safe work procedures related to carrying out basic estimation • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Planning and preparation include:	• gathering and basic analysis of project plans and specifications • confirmatory work site inspection and determination of work requirements.
Estimation and costing includes:	• overhead allowances • labour and materials • use of calculators and/or computers running appropriate software for estimating and calculating necessary details.
Quality requirements include:	• internal company quality policy and standards • manufacturer specifications, where specified • relevant regulations, including Australian standards • workplace operations and procedures.
Materials for estimation and job costing include:	• bagged materials • bricks • building elements, such as roof trusses, lining materials, flooring materials, prefabricated elements, boxed, drummed and tinned materials • other sheet materials applicable to construction • reconstituted timber products • sand • soil and aggregates • timber.
Environmental requirements include:	• clean-up management • waste management.

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Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCCM1012A Work effectively and sustainably in the construction industry

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to prepare for and sustain effective work within the construction industry. It covers the identification and clarification of the construction industry work context, scope and employment conditions, responsibility required to be accepted by the individual, working in a team, individual career path improvement activities and sustainable work practices and techniques.

Application of the Unit

Application of the unit This unit of competency supports the attainment of basic understanding of the structure, culture and role expectations of workers within the construction industry and sustainable use of materials and resources.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify industry structure, occupations, job roles and work conditions.	1.1. Scope and nature of the construction industry and its national economic importance are recognised. 1.2. ***Construction job roles***, occupations and trade callings of the construction industry are identified and related to direct and indirect employment opportunities. 1.3. Trends in technology, work processes and environmental issues which are likely to impact on the construction industry are identified and evaluated in terms of employment options. 1.4. Construction employment conditions, organisational requirements, responsibilities and duties are identified and related to jobs and career paths. 1.5. Safe work methods and practices are identified to meet Australian government and state and territory OHS legislative requirements.
2. Accept responsibility for own workload.	2.1. Work activities are planned and priorities and deadlines are established with ***work group members*** such as supervisors and communicated to others whose own work plans and timelines may be affected. 2.2. Work is completed against the plan and to the standard expected in the workplace and in accordance with any guidelines, directions and specifications provided by supervisors, including use of ***personal protective equipment***. 2.3. Variations and difficulties affecting performance or ***quality requirements*** of own work are identified and these issues reported to appropriate personnel using appropriate communication techniques and accessing relevant ***information***. 2.4. Additional support needed to achieve or improve work outcomes or quality is communicated clearly to the appropriate personnel.
3. Work in a team.	3.1. Site goals and the contributions to be made by ***teams*** in a construction activity are identified and understood. 3.2. Individual contributions to team activities are identified and confirmed with others in the team. 3.3. Assistance and encouragement are provided to other team members wishing to meet or enhance their role

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ELEMENT	PERFORMANCE CRITERIA
	and the role of the team. 3.4. Team improvements are initiated where possible and/or encouraged from other team members. 3.5. Causes of disharmony and other barriers to achievement are referred to the appropriate party for resolution.
4. Identify own development needs.	4.1. Skills and knowledge necessary to work effectively in the construction industry are identified. 4.2. Steps are taken, in consultation with appropriate personnel, to identify own ***learning needs*** for future work requirements. 4.3. Appropriate opportunities to learn and develop required skills and knowledge for future construction industry work opportunities are identified and evaluated.
5. Identify current resource use and identify opportunities to improve resource efficiency.	5.1. Work site ***environmental and resource efficiency issues*** and resources used in own work role are identified and recorded using ***appropriate techniques***. 5.2. Work site ***environmental hazards*** relating to the use of resources are identified and reported to designated personnel. 5.3. Enterprise plans to improve environmental practices, ***environmental requirements*** and resource efficiency are followed. 5.4. ***Suggestions*** are made for improvements to work site practices in own work area.
6. Comply with environmental regulations.	6.1. Procedures are followed to ensure compliance with environmental requirements. 6.2. Breaches or potential breaches are reported to ***designated personnel***.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

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REQUIRED SKILLS AND KNOWLEDGE

Required skills for this unit are:

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - establish and communicate deadlines
  - follow supervisor's instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - report variations or difficulties in performance and additional support required
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record resource use
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- basic understanding of sustainability on a construction work site
- common construction industry terminology and interpersonal communication requirements
- construction industry quality requirements
- construction industry size, scope of work and national economic importance
- environmental and resource hazards/risks, including compliance with relevant legislation associated with the environment, job specifications and procedures
- federal, state, and territory environmental or sustainability legislation, regulations and codes of practice relevant to this sector and applicable to own work role, e.g. Building Code of Australia (BCA)
- job safety analysis (JSA) and safe work method statements
- relevant environmental and resource efficiency systems and practices
- relevant industrial awards and enterprise agreements

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REQUIRED SKILLS AND KNOWLEDGE

- relevant legislation, regulations and workplace requirements relating to provisions covering discrimination and equal employment opportunity
- site meeting procedures
- typical site/team work structure, methods and communication processes.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant construction industry information, standards and specifications
- comply with site safety plans and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- communicate and work effectively and safely with others
- explain to others scope, employment and economic importance of the construction industry
- locate and identify documentation on site employment conditions and source of these conditions
- set personal and team work goals and participate in site meetings
- respond to personal conflict situations
- identify personal development needs and apply learning to future work tasks
- follow workplace procedures according to instructions given and report information only at own level of responsibility, including:
  - complying with environmental/sustainability legislation, and organisational and procedural requirements relevant to specific daily responsibilities
  - use of tools, such as an inspection checklist

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EVIDENCE GUIDE

	to collect and measure relevant information on resource and energy consumption • participating in and supporting improved environmental use of resources • recognising efficiency processes involving work practices and reporting as required.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning

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EVIDENCE GUIDE

knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and

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RANGE STATEMENT

regional contexts) may also be included.

Construction job roles include:	• bricklaying and blocklaying • carpentry • concreting • demolition • dogging • formwork and falsework • painting and decorating • rigging • roof tiling • scaffolding • solid plastering • steelfixing • wall and ceiling lining • wall and floor tiling • waterproofing.
Construction employment conditions include coverage of:	• AWAs • bulletins and newsletters • enterprise agreements • industrial awards • industry and workplace codes of practice • workplace agreements.
Organisational requirements include:	• access and equity principles and practice • anti-discrimination and related policy • business and performance plans • ethical standards • goals and objectives • legal and organisation policy, guidelines and requirements • quality • systems and processes.
Responsibilities and duties include:	• codes of conduct • job description and employment arrangements • organisation's policy relevant to work role • skills training and competencies • supervision and accountability requirements, including OHS • team structures.
Safe work methods and practices	• access to site amenities, such as drinking

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RANGE STATEMENT

include:	water and toilets • day to day observation of OHS policies and procedures • emergency procedures and use of basic firefighting equipment • general requirements for safe use of plant and equipment • general requirements for use of personal protective equipment and clothing • housekeeping to ensure a clean, tidy and safer work area • no drugs and alcohol at work • preventing bullying and harassment • risk assessment • smoking in designated areas • storage and disposal of waste and debris according to established procedures and environmental protection requirements.
Australian government and state and territory OHS legislative requirements include:	• Australian standards • construction industry OHS standards and guidelines • duty of care • health and safety representatives, committees and supervisors • licences, tickets or certificates of competency • National Code of Practice for Induction Training for Construction Work • national safety standards • OHS and welfare Acts and regulations • safety codes of practice, and JSA and safe work method statements.
Work group members include:	• coach or mentor • employee representative • peers, work colleagues, team, enterprise and other members of the organisation • supervisor or manager.
Personal protective equipment includes:	• caps • dust masks and respirators • ear muffs and plugs • gloves • hard hats

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RANGE STATEMENT

	• high visibility vests • jackets • overalls • safety glasses/goggles • steel capped boots.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Information includes:	• diagrams or sketches • instructions issued by authorised organisational or external personnel • manufacturer specifications and instructions • material safety data sheets (MSDS) • memos • organisation work specifications and requirements • plans and specifications • regulatory and legislative requirements • relevant Australian standards • safe work procedures or equivalent • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Teams:	• is a generic term that refers to the site work organisation • may be known/titled locally as crews, gangs, shifts or other industrially and historically acceptable term.
Learning needs and development processes include competency achievement/maintenance processes, which include:	• assessment processes • formal vocational education and training • on-the-job training and job rotation • recognition of prior learning • refresher training.
Environmental and resource efficiency issues include:	• minimisation of environmental risks and maximisation of opportunities to improve environmental performance and to promote more efficient production and consumption of natural resources on the work site, for

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RANGE STATEMENT

	example by minimising waste, through participation in or use of a waste minimisation system
	• using resources efficiently, including reducing material usage and supporting efficient energy and water use, such as:
	  • air testing pipes
	  • efficient fittings
	  • insulation
	  • site management to minimise stormwater pollution
	  • strategic use of materials to reduce off-cuts and wastage
	  • tool maintenance
	  • transportation
	  • using alternative practices, procedures and materials/products that reduce or eliminate resource consumption.

Appropriate techniques for recording resource use include:	• examination and documentation of resources on work site • examination and measurement of resources, materials and products from suppliers • examination of relevant information and data on efficiency and resource reduction • instructions and reports from other parties involved in the process of identifying and implementing improvements.

Environmental hazards include:	• substances (e.g. resource, waste, by-product) that are dangerous to living things in the environment, such as humans, animals, plants and water, including storage, handling and disposal of the following substances:
	  • toxic
	  • corrosive
	  • flammable
	  • explosive
	• may be infectious or have other dangerous characteristics.

Environmental requirements are to cover workplace quality management and include:	• clean-up protection • stormwater protection • waste management.

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RANGE STATEMENT

Suggestions for sustainable use of resources includes ideas that help to:	• ensure appropriate use of materials and make recommendations to others to use sustainable products and practices • identify alternative sources of energy or energy conservation • improve energy and water efficiency • prevent and minimise risks and maximise opportunities, such as use of solar or grey water, and other alternative forms of energy/resources where appropriate • reduce emissions of greenhouse gases by reducing waste, transportation and use of non-renewable resources, such as energy, water, fuel, and materials • use alternative products/materials, procedures and installation techniques to support efficiency and sustainability • use renewable, recyclable, reusable and recoverable resources (energy, water, materials/products and waste).

Compliance with environmental requirements includes:	• meeting relevant acts, laws, by-laws and regulations or best practice to support compliance in environmental performance and sustainability at each level as required (such as Environmental Protection, Biodiversity Conservation Act, BCA), including:
	  • federal
	  • industry
	  • international
	  • local government
	  • organisation
	  • reporting breaches
	  • state and territory.

Designated personnel to be contacted are determined by the enterprise and include:	• managers • supervisors • other senior personnel assigned to particular work site roles, such as safety officer.

Unit Sector(s)

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Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCCM1013A Plan and organise work

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to plan and organise individual and group work activities on a construction site. The unit includes identifying task requirements, planning steps and organising work.

Application of the Unit

Application of the unit This unit of competency supports the attainment of capabilities and understanding to prioritise work tasks and organise time and resources to undertake given tasks effectively and cooperatively with other team members.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify task requirements.	1.1. Task requirements are determined or confirmed and clarified to ensure correct interpretation of specifications or requirements.
2. Plan steps to complete tasks.	2.1. Task is interpreted and relevant steps are identified to ensure efficient conduct of work, and in accordance with ***safety*** (***OHS***), ***environmental requirements*** and ***quality requirements***.
	2.2. Steps are planned in conjunction with others.
3. Organise work.	3.1. Work activity is organised with other involved personnel to ensure safe and appropriate sequencing of tasks.
	3.2. All necessary documentation related to job planning progress is completed and recorded in accordance with workplace requirements.
4. Review planning and organising process.	4.1. Planning and organising of work activities is reviewed to establish the effectiveness of the process.
	4.2. Ideas for improvement are suggested and implemented in future planning and organising of work activities.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine or confirm and clarify task requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - plan steps and organise work activities with others
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to complete workplace documentation
- evaluating own actions and make judgements about performance and necessary

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REQUIRED SKILLS AND KNOWLEDGE

improvements

- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- interpret information relevant to the work activity including plans, specifications and drawings and documentation from a variety of sources
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.
  - using time management techniques to organise and prioritise work.

Required knowledge

Required knowledge for this unit is:

- work activity that needs to be planned and organised
- work safety, environmental and quality requirements
- workplace personnel that are to be involved in planning and organising tasks
- workplace reporting requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to plan and organise a variety of work activities. Evidence should be collected over a period of time in a range of general construction relevant contexts and include dealings with an appropriate range of situations.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information.

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EVIDENCE GUIDE

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

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EVIDENCE GUIDE

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Safety (***OHS***) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- handling of materials
- hazard control
- hazardous materials and substances
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - power cables, including overhead service trays, cables and conduits
  - restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
  - working with dangerous materials
- organisational first aid

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RANGE STATEMENT

	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices • use of firefighting equipment • use of tools and equipment • workplace environment and safety.
Environmental requirements include:	• clean-up management • noise and dust • vibration • waste management.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCCM1014A Conduct workplace communication

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to communicate effectively with other workers in a construction workplace environment. It includes gathering, conveying and receiving information through verbal and written forms of communication.

Application of the Unit

Application of the unit This unit of competency supports achievement of communication skills carried out as an integral part of routine work.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Gather, convey and receive information.	1.1. Verbal and written instructions are gathered, received and responded to with correct actions. 1.2. Instructions are conveyed accurately. 1.3. Work ***signage interpretation*** and other ***safety*** (***OHS***) requirements are responded to with correct action. 1.4. ***Information*** is conveyed in English, and the information is ***interpreted*** and message confirmed. 1.5. Questions are used to gain additional information and to clarify understanding, using appropriate ***communication transfer*** techniques.
2. Carry out face-to-face routine communication.	2.1. Routine instructions and messages are received and followed. 2.2. Workplace procedures are carried out to company requirements in ***communication with others***. 2.3. Information from a range of sources is accessed and interpreted using a variety of ***communication modes***. 2.4. Information is selected and sequenced correctly. 2.5. Verbal and written reporting is completed where required.
3. Apply visual communication.	3.1. Visual communication is used that follows accepted industry practice or social conventions. 3.2. Attention of communicating parties is obtained, confirmed and/or acknowledged. 3.3. Intention of the visual communication is clarified and confirmed at each step. 3.4. Visual communication that is unclear or ambiguous is questioned or visually cancelled. 3.5. Instances of unclear visual communication are followed up to avoid repeated problems.
4. Participate in simple on-site meeting processes.	4.1. Correct process for on site meetings is identified and followed to predetermined or agreed procedures. 4.2. Responses are sought and provided to others in the group. 4.3. Constructive contributions are made. 4.4. Goals or outcomes are identified and/or recorded.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to communicate with others to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret:
    - signage and other relevant documentation
    - simple instructions and messages
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to complete records and reports as required
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- participating in meetings
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- bulletins
- checklists
- communication devices
- company procedures
- construction terminology
- emergency procedures
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS) and materials handling methods
- memos
- OHS requirements
- project quality requirements

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REQUIRED SKILLS AND KNOWLEDGE

- signage
- work instructions
- workplace policies.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information • comply with site safety plan, OHS regulations and state and territory legislation applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use communication equipment • communicate and work effectively and safely with others • interpret all signage accurately • complete tasks successfully following instruction • convey pieces of information to other workers accurately • fill out workplace documents accurately • frame questions at an on-site meeting in a range of contexts or occasions over time.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements.

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EVIDENCE GUIDE

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances

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EVIDENCE GUIDE

assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Signage interpretation includes:

- directional signs
- facility or location signs and hazards
- site safety signs
- traffic signs.

Safety (***OHS***) is to be in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan and may include:

- handling of materials
- hazard control
- hazardous materials and substances
- organisational first aid
- personal protective clothing and equipment prescribed under legislation, regulations and

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RANGE STATEMENT

	workplace policies and practices • use of firefighting equipment • use of tools and equipment • workplace environment and safety.
Information includes:	• diagrams or sketches • instructions issued by authorised organisational or external personnel • manufacturer specifications and instructions, where specified • MSDS • memos • regulatory and legislative requirements • relevant Australian standards • safe work procedures or equivalent • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Interpretation of information includes:	• bulletins • checklists • company procedures and regulations • delivery dockets • emergency procedures • induction procedures • industrial agreements • instructions • job safety analysis (JSA) and safe work method statements • maps • MSDS • OHS requirements • quality requirements • work schedules • workplace policies.
Communication transfer includes use of telephones (including mobile) and written communication, and includes:	• email • facsimile • internet • two-way radios.
Communication with others includes:	• contractors • co-workers

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RANGE STATEMENT

	• supervisors • the public • trainers.
Communication modes includes:	• active listening • group interaction • interpreting signage • meetings • questioning • verbal and written.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCCM1015A Carry out measurements and calculations

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to carry out measurements and perform simple calculations to determine task and material requirements for a job in a construction work environment.

Application of the Unit

Application of the unit This unit of competency supports achievement of skills to take measurements and use these to calculate material qualities and calculations for related tasks commonly used and applied in construction work.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions are confirmed and applied using relevant ***information***.
	1.2. ***Safety*** (***OHS***) requirements are obtained from site safety plan, other regulatory specifications or legal obligations, and are applied.
	1.3. Measuring and calculating ***equipment*** selected to carry out tasks is consistent with job requirements, is checked for serviceability, and any faults are rectified or reported.
2. Obtain measurements.	2.1. Method of obtaining the measurement is selected and applied.
	2.2. ***Measurements*** are obtained using a rule or tape accurate to 1mm.
	2.3. Measurements, including ***areas and volumes***, are confirmed and recorded.
3. Perform calculations.	3.1. Appropriate ***calculation factors*** are determined and correct method is selected for achieving required result.
	3.2. ***Material quantities*** for the project are correctly calculated using appropriate factors.
	3.3. Results are confirmed and recorded.
4. Estimate approximate quantities.	4.1. Calculations for determining material requirements are taken.
	4.2. Appropriate formulas for calculating quantities are selected.
	4.3. Quantities are estimated from the calculations taken.
	4.4. Material quantities for the project are calculated, confirmed and recorded within enterprise tolerances.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

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REQUIRED SKILLS AND KNOWLEDGE

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record measurements, calculations and quantities
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements, calculations and geometry
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- basic calculators
- communication devices
- company procedures
- construction terminology
- job safety analysis (JSA) and safe work method statements
- measuring, calculating, geometry and determination of quantities
- processes for care of measuring equipment
- project quality requirements
- site and equipment safety (OHS) requirements
- tolerances.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information
- comply with site safety plan, OHS regulations and state and territory legislation applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools and equipment
- communicate and work effectively and safely with others
- complete measurements, calculations and determination of quantities for different projects of varying complexity in a range of contexts or occasions over time
- calculate each of the following using a realistic construction task or example:
  - length
  - perimeter
  - circumference
  - area
  - volume
  - number
  - ratio
  - percentage
  - conversion of metres to millimetres and millimetres to metres
  - measure using a rule or tape measure five separate tasks within 1mm accuracy.

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EVIDENCE GUIDE

Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments.

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EVIDENCE GUIDE

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel

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RANGE STATEMENT

	• manufacturer specifications and instructions • maps • material safety data sheets (MSDS) • memos • organisation's work specifications and requirements • plans and specifications • regulatory and legislative requirements • relevant Australian standards • safe work procedures or equivalent • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Safety (***OHS***) is to be in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan and may include:	• clothing and equipment • handling of materials • hazard control • hazardous materials and substances • organisational first aid • use of firefighting equipment • use of tools and equipment • workplace environment and safety.
Equipment includes:	• calculators and laser equipment • rulers • tape measures • trundle wheels.
Measurements are to:	• be in metric scale • cover all necessary calculations.
Areas and volumes include:	• calculating regular and irregular shapes, such as rectangles, squares, circles, triangles, trapeziums, cubes, cones, pyramids and cylinders that represent calculations taken in a construction environment.
Calculation factors:	• include length, area, weight, height, width, depth, volume, mass, scales, ratios, perimeters, quantities, numbers, grade, percentages, addition, subtraction, multiplication and division • are to be performed manually and with the aid of a calculator.

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RANGE STATEMENT

Material quantities are to be:	• calculated in either packed, bulk, loose or compacted states • converted to volumes in the other states.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCCM1016A Identify requirements for safe tilt-up work

Modification History

Nominal AQF level of unit and unit title changed to better reflect unit outcomes
Prerequisite unit requirement removed
Changes to wording of elements and required skills
Not equivalent to CPCCCM2011A

Unit Descriptor

This unit of competency specifies the outcomes required for tilt-up work induction training within the construction industry. Licensing requirements will apply to this unit of competency depending on the regulatory requirements of each jurisdiction.

Application of the Unit

This unit of competency supports achievement of tilt-up work knowledge required prior to entering tilt-up workplaces. It meets the needs of workers requiring tilt-up work induction training according to legislative requirements.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	Identify tilt-up construction and risk management processes.	1.1	Relationship is identified between each ***stage of the tilt-up construction process*** and the following stage, and typical faults, problems, hazards and possible effects if design and safety requirements are not met.
		1.2	Basic principles of risk management and duty holders responsible are identified.
		1.3	Minimum requirements for a safe work method statement for each task as outlined in the ***national code of practice***, and the duty holder responsible for its preparation and compliance are identified.
		1.4	Minimum requirements are identified for a work plan and/or work health and safety (WHS) management plan for tilt-up construction, as outlined in the national code of practice.
		1.5	Available ***skills training*** opportunities relevant to own work, role and responsibilities are identified.
2	Identify information relating to safe tilt-up construction.	2.1	***Regulatory information*** relevant to own work, role and responsibilities is identified.
		2.2	Roles and responsibilities of self and others relevant to own work and role in tilt-up construction are identified.
		2.3	General work procedures, ***documentation, drawings and plans*** for carrying out the tilt-up construction process relevant to own work, role and responsibilities are identified.
		2.4	General safety requirements for ***equipment and tools*** used in the tilt-up construction process relevant to own work, role and responsibilities are identified.
3	Identify procedures to maintain safety of self and others.	3.1	Communication with others is undertaken to establish that key safety requirements have been met for preceding stages of tilt-up construction.
		3.2	General procedures for responding to, rectifying and reporting faults, problems and hazards relevant to own work, role and responsibilities are identified.

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3.3 Methods and procedures used to control tilt-up construction ***hazards*** are identified, including the content of the work plan and/or WHS management plan and ***safe work method statements*** relevant to own work, role and responsibilities.

3.4 Sequence of tasks and activities relevant to own work is identified and adequacy of the associated safe work method statement is reviewed by conducting a ***job safety analysis***.

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication and interpersonal skills to:
  - contribute to the discussion of workplace hazards and risks
  - ask effective questions
  - collaborate with colleagues
  - relay information to others
  - report on WHS issues
- language and literacy skills to understand plans and procedures, including WHS requirements, such as:
  - safety signs and symbols
  - safe work method statements
  - safe working procedures

Required knowledge

- construction terminology
- hazard identification and risk control related to tilt-up work
- job safety analysis (JSA) and safe work method statements (SWMS)
- requirements for planning, preparing and carrying out the tilt-up construction process as relevant to own work, role and responsibilities
- safety equipment used on construction work sites
- stages in the tilt-up construction process
- WHS standards, legislative requirements and codes of practice related to tilt-up work

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Competency is to be assessed only after completion of the General Induction Training Program specified by the National Code of Practice for Induction for Construction Work.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

Evidence must confirm understanding and knowledge of the following:

- relevant legal responsibilities, codes of practice and standards for tilt-up construction work
- the range of common tilt-up construction hazards and procedures for the assessment of risks and application of the hierarchy of control
- an understanding of job safety analysis and safe work method statements.

Context of and specific resources for assessment

The relevant WHS authority may have specific requirements concerning the expertise necessary to be a subject expert for assessment of this unit. Assessment must be made according to any such requirements.

Procedures and documentation should cover those used in the workplace.

Resources must be available to support the program including:

- relevant standards, regulations and code of practice for tilt-up construction
- Australian standards AS3850 and AS3600
- participant materials and other information
- drawings and specifications
- tilt-up slab related plans
- safe load tables
- safe work method statements
- JSA materials.

A range of assessment tools and resources should be used to suit the learning preferences or special learning needs of individual participants.

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Method of assessment

Assessment methods may include more than one of the following:

- practical assessment
- oral questioning
- written test
- work-based activities
- problem solving scenarios
- simulated project based activity.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Stages of the tilt-up construction process cover:

- design and manufacture
- handling, storage and transportation
- cranage and erection
- temporary bracing, stabilisation and incorporation of concrete panels
- demolition

National code of practice refers to:

- National Code of Practice for Precast, Tilt-Up and Concrete Elements in Building Construction.

Skills training opportunities could include completing further training, including:

- CPCCBC4022A Supervise tilt-up work
- CPCCCO3028A Carry out tilt panel construction
- CPCCRI3015A Perform advanced tilt-up slab erection.

Regulatory information includes general WHS requirements, such as:

- Australian standards AS3850 and AS3600
- duty holder responsibilities
- emergency procedures
- relevant standards, regulations and codes of practice for tilt-up and pre-cast concrete construction

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- training, supervision and risk management in the context of tilt-up and pre-cast concrete construction.

Documentation, drawings and plans include:

- design provisions and drawings
- erection and crane drawings and documentation
- JSA documentation
- marking plan and shop drawings
- prefabricators and engineers' inspection reports and statements
- safe work method statements
- specifications
- transport management plan
- work plan and/or WHS management plan.

Equipment and tools include:

- bracing
- cranes
- elevated work platforms
- manual tools
- mobile scaffolding
- portable electric and pneumatic tools
- props
- rigging equipment
- rigging gear
- safety net and static lines.

Hazards include anything with the potential to cause injury, harm or ill health, such as:

- environmental factors, e.g. wind, temperature, noise and lighting
- overhead or underground services
- trees, buildings and structures
- uneven or unstable ground
- unstable panels during lifting.

Safe work method statement is a statement that:

- describes how safety measures will be implemented to do the work safely
- describes the control measures that will be applied to the work activities
- identifies work activities assessed as having safety risk or risks
- includes a description of the equipment used in the work, the qualifications of the personnel doing the

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work, and the training required to do the work safely
- states the safety risk or risks.

Job safety analysis is:

- a technique that breaks a task into steps
- identifies the hazards and appropriate control measures for each step.

Unit Sector(s)

Functional area

Unit sector Construction

Custom Content Section

Not applicable.

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CPCCCM2001A Read and interpret plans and specifications

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to read and interpret plans and specifications relevant to construction operations. It includes the identification of types of plans and drawings and their functions, the recognition of commonly used symbols and abbreviations, the identification of key features and specifications on a site plan, the comprehension of written job specifications and the recognition of document status and amendment detail.

Application of the Unit

Application of the unit This unit of competency supports achievement of basic reading and interpretation of plans and specifications commonly used in the construction industry.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify types of drawings and their functions.	1.1. Main types of ***plans and drawings*** used in the construction sector of the industry are identified. 1.2. ***Key features*** and functions of each type of drawing are identified. 1.3. ***Quality requirements*** of company operations are recognised and adhered to. 1.4. ***Environmental requirements*** and controls are identified from job plans, specifications and environmental plan.
2. Recognise amendments.	2.1. Title panel of ***project documentation*** is checked to verify latest amendments to drawing. 2.2. Amendments to ***specifications*** are checked to ensure currency of ***information*** and conveyed to others where appropriate.
3. Recognise commonly used symbols and abbreviations.	3.1. Construction symbols and abbreviations are recognised. 3.2. Legend is located on project drawings, and symbols and abbreviations are correctly interpreted.
4. Locate and identify key features on a site plan.	4.1. Orientation of the plan with the site is achieved. 4.2. Key features of the site are identified and located. 4.3. Access to site is gained and services, main features, contours and datum are identified.
5. Identify project requirements.	5.1. Dimensions for project and nominated locations are identified. 5.2. Construction types and dimensions for nominated locations are identified. 5.3. Environmental controls and locations are identified. 5.4. Location, dimensions and tolerances for ancillary works are identified.
6. Read and interpret job specifications.	6.1. Job specifications are identified from drawings, notes and descriptions. 6.2. Standards of work, finishes and tolerances are identified from the project specifications. 6.3. ***Material attributes*** are identified from specifications.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and make calculations, including heights, areas, volumes and grades
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- basic calculations of heights, areas, volumes and grades
- commonly used construction symbols and abbreviations
- construction terminology
- drawing conventions
- features of plans and elevations, including direction, scale, key, contours, symbols and abbreviations
- job safety analysis (JSA) and safe work method statements
- key features of formal job specifications
- processes for application of scales in plan preparation and interpretation
- project quality requirements
- site and equipment safety (OHS) requirements
- techniques for orienting/confirming the orientation of a plan.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan, OHS regulations and state and territory legislation applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- communicate and work effectively and safely with others
- for a minimum of two different projects, read and interpret the project plans, including:
  - confirmation of amendment status and drawings confirmed 'for construction'
  - orientation of plans to the ground
  - six key features on both the plan and the site
  - confirmation of six items of information from the title block of the project plans
  - six construction dimensions, levels and locations from the project plans
  - six ancillary works dimensions, levels and locations from the project plans
- for a minimum of two formal specifications, identify the dimensions, material requirements and processes to be followed.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements

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EVIDENCE GUIDE

and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

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EVIDENCE GUIDE

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Plans and drawings include:

- construction plans
- cross-sectional plans
- dimensions and notes
- illustrations
- longitudinal plans

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RANGE STATEMENT

	• project specifications • site plans • structural detail and specification providing illustrations and dimensions.
Key features of plans and specifications include:	• characteristics • compatibility • construction • location • pattern dimension • quantities • sizes • type of product or service.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Environmental requirements include:	• clean-up management • waste management.
Project documentation includes:	• contracts • drawings • schedule of rates • specifications • standard procedures and practices • supplementary specifications • work schedules.

Specifications include:	• detail relating to materials and quality of work, quality assurance, nominated subcontractors, and provision of site access/facilities
	• details relating to performance, including:
	  • characteristics
	  • material types
	  • standards of work
	  • tolerances
	  • treatments and finishes.

Information includes:	• diagrams or sketches and graphics • instructions issued by authorised organisational or external personnel • manufacturer specifications and instructions • maps

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RANGE STATEMENT

	• material safety data sheets (MSDS) • memos • organisation work specifications and requirements. • plans and specifications • regulatory and legislative requirements pertaining to operations and the environment • relevant Australian standards • safe work procedures related to construction site operations • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Material attributes include:	• characteristics • construction requirements • treatments and finishes • types.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCCM2002A Carry out excavation

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to undertake hand excavation tasks and excavations requiring the assistance of plant machinery to form excavations for footings, and the provision of services. It includes excavation to new and existing sites, and new services or the diversion of existing services.

Application of the Unit

Application of the unit

This unit of competency supports achievement of skills to safely and efficiently undertake basic excavation on a construction site, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained, confirmed and applied from relevant ***information*** for ***planning and preparation***. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications. 1.6. ***Materials*** appropriate to the work application and ***quality requirements*** are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Locate excavation site and erect safety equipment.	2.1. Excavation route is located, and line and depth are established from site plans and instructions. 2.2. Site pegs/profiles are used to identify service markers and to ***set out*** service points and the excavation limits are marked. 2.3. Safety barricades and signs appropriate to the project are erected in positions as required by site safety plan. 2.4. Temporary drainage system is established to divert surface and sub-surface water from excavation. 2.5. Service markers or taped areas are identified and damage or interference with underground services avoided.
3. Dig excavations.	3.1. ***Excavations*** are safely dug with hand tools to ensure correct route, line and depth, and that procedures are used to minimise risk to self and others. 3.2. Machine operator is assisted with excavation to ensure correct route, line and depth, and that correct procedures are used to minimise risk to self and others. 3.3. Trench/excavation support is installed where

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ELEMENT	PERFORMANCE CRITERIA
	specified by job specifications and regulations.
	3.4. Excavation is cleaned free from loose material with hand tools and according to job requirements and instructions.
4. Clean up.	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	4.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - assist machine operator
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental

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REQUIRED SKILLS AND KNOWLEDGE

abilities

- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- commonly used in-ground services and identification by relevant markers
- construction terminology
- excavation materials
- excavation techniques
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- processes for the calculation of material requirements
- quality requirements
- regulatory requirements for excavation support for safe access
- safe work with common plant used on construction industry sites
- types, characteristics, uses and limitations of tools and equipment
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools, plant and equipment • communicate and work effectively and safely with others • determine from an existing set out, a mark out and then excavate site as part of an overall project to job specifications without damaging services.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements

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EVIDENCE GUIDE

- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete

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EVIDENCE GUIDE

confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- maps
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements pertaining to carrying out excavations
- relevant Australian standards

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RANGE STATEMENT

	• safe work procedures related to carrying out excavations • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Planning and preparation include:	• work site inspection • equipment defect identification • assessment of conditions and hazards • determination of work requirements.

Safety (***OHS***) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	  • working with dangerous materials
	• organisational first aid
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environment and safety.

Tools and equipment include:	• automatic levels

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RANGE STATEMENT

	• brooms • buckets • crow bars • hammers • hoses • laser levels • levels • measuring tapes and rules • picks • profiles • saws • set out pegs • shovels • staff • straight edges • string lines • wheelbarrows.
Materials include:	• nails • pegs • sheet material shoring (timber and metal) • timber.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Environmental requirements include:	• clean-up management • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Set out includes:	• identification of services that can be damaged or impede excavation • marking out of the project.
Excavations include:	• extension of existing structures, to provide provisions for new services and to modify or repair existing services • provisions for footings/slabs to new structures • shoring (timber, metal or piling)

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RANGE STATEMENT

- those being undertaken on sloping ground, flat ground, wet ground, dry ground, loose ground or any type of foundation material, with mechanical assistance possibly required for rock
- trench/excavation support using sheet material.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCCM2003B Calculate and cost construction work

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to estimate materials, labour and time requirements and establish costs for provision of services or products in basic construction work. It covers the gaining of information; the estimation of materials, labour and time; the calculation of costs; and the associated documentation.

Application of the Unit

Application of the unit The unit supports tradespersons and those in independent construction job roles to undertake basic costing of a minor construction job or a discrete part of a job. Site location for this work application may be either domestic or commercial.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Gather information.	1.1. Details of requirements are obtained and understood through discussion with customer or from information supplied. 1.2. ***Plans and specifications*** are accessed and site is inspected to confirm full requirements. 1.3. Details of products and services to be provided are developed and checked for availability and as fit for purpose. 1.4. Delivery point and methods of transportation are determined where necessary. 1.5. Details are accurately recorded and checked in accordance with workplace procedures.
2. Estimate materials, labour and time.	2.1. Work, including preparatory tasks, is planned and sequenced to cover all necessary activity. 2.2. ***Types and quantities of materials*** required for product work are estimated based on availability, fitness for purpose and current costs. 2.3. Labour requirements to perform work are estimated to complete the work activity. 2.4. Time requirements to perform work are accurately estimated and checked with appropriate personnel.
3. Calculate costs.	3.1. Total materials, ***labour and overhead costs*** are calculated in accordance with workplace procedures and statutory requirements. 3.2. Total work cost is calculated, including overheads and mark-up percentages set by appropriate personnel. 3.3. Final cost for work is calculated and checked for accuracy.
4. Document and verify details.	4.1. Details of costs and charges are clearly and accurately documented in accordance with workplace procedures. 4.2. Costs, calculations or other details are verified in accordance with workplace procedures and current costing data. 4.3. Quotation/tender documentation is prepared and verified. 4.4. ***Costing documents*** are accurately completed for future reference in accordance with workplace procedures.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- accessing current costing data
- accurately calculating labour costs
- accurately calculating material quantities
- producing accurate written costing information
- reading and interpreting drawings and material specifications.

Required knowledge

Required knowledge for this unit is:

- application of GST
- construction terminology
- environmental and sustainability requirements
- estimating and calculating processes
- impact of time on wages and other costs
- international system of units (SI) system of measurements relevant to the construction industry
- process of estimating and costing construction work
- quality requirements of construction projects
- relevant statutory and authority requirements related to estimating and costing work
- relevant tendering and contracting documentation
- safe work method statements
- sources of information and the processes for calculating material requirements
- standards applicable to the work to be undertaken, e.g. Australian standards and the Building Code of Australia.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications to the estimation and costing of work
- as a minimum, estimate and cost three varied jobs, including:
  - estimate quantities of material required
  - determine the types and amount of labour required to complete the work
  - estimate time required to complete the work
  - estimate overheads associated with the job
  - a written quotation/tender for each of the work requirements.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying

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EVIDENCE GUIDE

	safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

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EVIDENCE GUIDE

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Plans and specifications include:

- sketches or drawings
- statements of requirements, including environmental requirements relating to the acquisition, use and disposal of materials
- materials lists and quantity schedules
- building codes
- materials specifications, including specifications of material reuse and recycling.

Types and quantities of materials include consumables such as:

- aluminium and steel framing and steel reinforcing
- bricks, masonry blocks and pavers
- cement, sand, aggregates and bonding agents
- decorative finishing materials, such as wallpaper, laminates, gilding materials, lacquers and polishes
- fixings, fastenings and adhesives

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RANGE STATEMENT

	• fuel and lubricants • paint, solvents and cleaning agents • tiles and glass • timber, plywoods, fibreboard and composites • wall and ceiling lining materials, plaster and platers products and external claddings.

Labour and overhead costs include:	• labour costs, such as:
	  • personal protective equipment
	  • site facilities
	  • wages and on-costs
	• overhead costs, such as:
	  • administration
	  • Insurance
	  • local government fees and charges
	  • plant and equipment hire
	  • transport
	  • use of communication technology
	  • waste removal fees.

Costing documents include:	• job sheets • materials list and estimates • quotations and tenders • work schedules.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCCM2004A Handle construction materials

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to safely manually handle, store and apply environmental management principles associated with construction materials and components. It includes preparing material for mechanical handling.

Application of the Unit

Application of the unit

This unit of competency supports achievement of skills and knowledge to identify commonly used construction materials and safely handle and store them manually or in preparation for mechanical handling, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained, confirmed and applied from relevant ***information*** for ***planning and preparation***. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Manually handle, sort, stack and store construction materials.	2.1. Construction materials are moved to specified location applying safe ***manual handling*** techniques. 2.2. Construction materials and components in accordance with job specifications are sorted to suit material type and size, and stacked for ease of identification and retrieval for task sequence and job location. 2.3. Construction materials and components are protected against physical and water damage and stored clear of access ways, for ease of identification, retrieval and distribution. 2.4. Signage and barricades are erected to isolate, protect and secure stored materials from workplace traffic or access. 2.5. Procedures are applied to ensure no cross-contamination of materials. 2.6. ***Hazardous materials*** are identified and separated. 2.7. Non-toxic materials are carried using correct ***handling procedures***. 2.8. ***Dust suppression procedures*** are used to minimise health risk to work personnel and others.

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ELEMENT	PERFORMANCE CRITERIA
	2.9. ***Protection of material*** is provided in accordance with specific material needs.
3. Prepare for mechanical handling of materials.	3.1. Construction materials and components are stacked/banded for ***mechanical handling*** in accordance with the type of material, plant and equipment to be used.
	3.2. Construction materials and components are loaded, unloaded, moved or located at specified locations.
4. Clean up.	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	4.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities

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REQUIRED SKILLS AND KNOWLEDGE

- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- carpentry materials
- carpentry materials handling techniques
- construction terminology
- hazardous materials
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- material sizes
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- processes for the calculation of material requirements
- quality requirements
- types, characteristics, uses and limitations of tools and equipment
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools, plant and equipment • communicate and work effectively and safely with others • safely handle, sort and stack varying lengths of timber, providing quick access and use • safely move and stack a given quantity of sheet material • safely handle other building and construction components and materials for one construction project.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include:

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EVIDENCE GUIDE

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and

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EVIDENCE GUIDE

separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements

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RANGE STATEMENT

	pertaining to handling construction materials • relevant Australian standards • safe work procedures related to handling construction materials • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Planning and preparation include:	• work site inspection • equipment defect identification • assessment of conditions and hazards • determination of work requirements.

Safety (***OHS***) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	  • working with dangerous materials
	• organisational first aid
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
	• use of firefighting equipment
	• use of tools and equipment

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RANGE STATEMENT

	• workplace environment and safety.
Tools and equipment include:	• banders • hammers • pallets • pinch bars • scaffolding • tin snips • wheelbarrows.

Materials:	• include:
	  • timber, reconstituted timber products and other building and sheet materials applicable to building and construction, bricks, bagged materials, sand, soil and aggregates
	• may include:
	  • building elements such as roof trusses, lining materials, flooring materials, prefabricated elements, boxed, drummed and tinned materials, concrete masonry units, joinery units, floor and wall tiles, roofing tiles, steel sections/components, insulation and glass.

Environmental requirements include:	• clean-up management • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Manual handling includes:	• carrying materials using correct shifting techniques • control of waste • using pallets.
Preparing for ***manual handling*** includes:	• forklifts • pallet jacks • trucks.
Hazardous materials include:	• solvents, glues, coatings and inflammable materials • non-toxic materials, including general building and construction materials.

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RANGE STATEMENT

Handling procedures include:	• MSDS, calculation of quantities, stacking and storing of materials • handling activities may require assistance of others where size or weight is a factor.
Dust suppression procedures include:	• keeping dust in the air to a minimum.
Protection of material includes:	• correct handling and stacking techniques without damaging the material • protecting with covers.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCCM2005B Use construction tools and equipment

Modification History

Minor editorial and formatting changes
Equivalent to CPCCCM2005A

Unit Descriptor

This unit of competency specifies the outcomes required to safely select and use construction tools and equipment. It includes hand tools, power tools, pneumatic tools, and plant and equipment.

Application of the Unit

This unit of competency supports achievement of use of basic hand and power tools commonly used in the construction industry.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions and operational details are obtained, confirmed and applied from relevant ***information*** for ***planning and preparation***.
		1.2	***Safety (OHS)*** requirements are followed in accordance with safety plans and policies.
		1.3	Signage and barricade requirements are identified and implemented.
		1.4	Plant, tools and equipment selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
		1.5	***Environmental requirements*** are identified in accordance with environmental plans and ***statutory and regulatory authority*** obligations and are applied.
2	Identify and select hand, power and pneumatic tools.	2.1	***Hand tools*** and ***power and pneumatic tools,*** their functions, operations and limitations are identified and selected.
		2.2	OHS requirements for using hand, power and pneumatic tools are recognised and adhered to.
		2.3	Pre-operational checks, including lubricants, hydraulic fluid and water, are completed according to manufacturer recommendations.
3	Use tools.	3.1	Hand tools used are appropriate to the task and materials, and are in accordance with OHS requirements.
		3.2	Power and pneumatic tools are safely and effectively used in accordance with manufacturer recommendations and state or territory OHS requirements.
		3.3	Tools are sharpened and maintained.

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4	Identify, select and use plant and equipment.	4.1	***Plant and equipment*** are selected and used consistent with OHS requirements and the needs of the job.
		4.2	Pre-operational checks, including lubricants, hydraulic fluid and water, are completed according to manufacturer recommendations.
		4.3	Plant and equipment are maintained in accordance with manufacturer recommendations and standard work practices.
5	Clean up.	5.1	Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
		5.2	Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- construction terminology
- construction tool use techniques
- job safety analysis (JSA) and safe work method statements
- plans, specifications and drawings
- quality requirements
- relevant Acts, regulations and codes of practice
- safety manuals and instructions of tools and equipment
- types, characteristics, uses and limitations of plant, tools and equipment
- workplace and equipment safety requirements.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use a representative range of tools, plant and equipment used in the workplace
- communicate and work effectively and safely with others
- identify and select hand tools for given tasks
- safely use and maintain a minimum of rule, tape, square, hammer, hand saw, hand plane, chisel, shovel, wheelbarrow, sledge hammer, pick, mattock, crow bar and pinch bar for given tasks
- identify power and pneumatic tools, including electrical and compressed air safety, for a given task.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

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Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured

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learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements pertaining to using construction tools and equipment
- relevant Australian standards
- safe work procedures related to using construction tools and equipment

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- signage
- verbal or written and graphical instructions
- work bulletins
- work schedules.

Planning and preparation include:

- work site inspection
- equipment defect identification
- assessment of conditions and hazards
- determination of work requirements.

Safety (OHS) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:

- emergency procedures related to equipment operation, including emergency shutdown and stopping, extinguishing fires, organisational first aid requirements and evacuation
- handling of materials
- hazard control
- hazardous materials and substances
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - power cables, including overhead service trays, cables and conduits
  - restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
  - working with dangerous materials
- organisational first aid
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- use of firefighting equipment
- use of tools and equipment
- workplace environment and safety.

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Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Hand tools may include:	• cutting, planing, boring, shaping, fixing, fastening and percussion tools • material shifting and holding tools • setting out, marking out and levelling tools.
Power and pneumatic tools may include:	• portable, electrical, pneumatic and gas driven tools, including their leads and hoses.
Plant and equipment include:	• 240v power supplied • compressors • generators • hand held or small single person operated equipment • pneumatic driven.

Unit Sector(s)

Functional area

Unit sector Construction

Custom Content Section

Not applicable.

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CPCCCM2006A Apply basic levelling procedures

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to carry out levelling in a single plane for the purpose of establishing correct and accurate set out of buildings components. It includes the set up, testing and use of levelling devices, and establishing and transferring heights using a range of levelling equipment.

Application of the Unit

Application of the unit

This unit of competency supports achievement of skills to undertake levelling work using a variety of methods and equipment commonly used in the construction industry, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** to prepare for ***basic levelling activities***.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
	1.5. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Set up and use levelling device.	2.1. ***Heights or levels*** to be transferred/established are identified from project plans or instructions for ***levelling procedures***.
	2.2. ***Levelling devices*** are set up and tested in accordance with manufacturer instructions, including ***levelling device tolerance checks***.
	2.3. Levelling staffs are accurately applied.
	2.4. Levels are shot and heights transferred to required location and marked and/or recorded to job requirements.
	2.5. Results of levelling procedure are documented to organisational requirements.
3. Clean up.	3.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	3.2. Tools and equipment are cleaned, checked, maintained, including ***levelling device operator maintenance***, and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- application and requirements for line, level and plumb in construction projects
- basic construction processes
- basic mathematical techniques associated with levelling
- construction terminology
- job safety analysis (JSA) and safe work method statements
- levelling device types, characteristics, technical capabilities and limitations
- levelling techniques related to essential tasks
- processes for interpreting engineering drawings and sketches
- processes for setting out
- project quality requirements
- site and equipment safety (OHS) requirements

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REQUIRED SKILLS AND KNOWLEDGE

- site isolation and traffic control responsibilities and authorities
- symbols and construction terminology of construction plans.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan, OHS regulations and state and territory legislation applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools and equipment
- communicate and work effectively and safely with others
- transfer levels and record differences in height on one project to job specifications using:
  - a spirit level and straight edge
  - levelling with water technique
  - laser levelling devices
  - optical levelling devices
- confirm accuracy of the readings taken for all above, including set-up and movement of device in two locations
- conduct a two peg test with an automatic level to confirm that instrument meets manufacturers' tolerances
- accurately record the results of each levelling procedure to organisational requirements.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

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EVIDENCE GUIDE

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role

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EVIDENCE GUIDE

and the practical requirements of the workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- maps
- material safety data sheets (MSDS)

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RANGE STATEMENT

	• memos • organisation work specifications and requirements. • plans and specifications • relevant Australian standards • safe work procedures related to performing levelling • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Basic levelling activities include:	• setting up of devices • recording of heights or level and the transfer of data points • transferring levels/heights for formwork • shooting levels for concrete slabs • recording ground levels at respective critical set out points • recording slab or pad levels for placement of steel columns or masonry piers • recording or checking levels in drainage • positioning offsets and recovery pegs for construction projects.

Safety (***OHS***) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public

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RANGE STATEMENT

	• working at heights • working in confined spaces • working in proximity to others • working with dangerous materials • organisational first aid • personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices • use of firefighting equipment • use of tools and equipment • workplace environment and safety.
Tools and equipment include:	• chalk lines • hammers • marking equipment • measuring tapes and rules, spirit levels and straight edges • plumb bobs • saws, bolt cutters and saw stools • signage for laser levelling • string lines and laser targets • water levels, laser levels, optical levels and automatic levels • wooden and steel pegs.
Environmental requirements include:	• clean-up management • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Heights or levels may be indicated by:	• chalk or nail mark and marks on vertical surface • datum and survey peg • drawing or sketch • verbal or written instructions.
Levelling procedures:	• include open or closed traverse using height of instrument or rise and fall methods of reduction • may be completed in a team arrangement.
Levelling devices:	• include: • spirit level, levelling using water, laser level, optical level, string line, tape

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RANGE STATEMENT

	measure, automatic level, survey pegs, levelling staff and plumb bob • may include: • boning rods, inclinometers and batter pegs/boards.
Levelling device tolerance checks include:	• reverse readings for spirit level • two peg test for automatic level.
Levelling device operator maintenance:	• includes: • authorised servicing • cleaning • monitoring, recording and reporting of faults • may include conduct of authorised minor replacements.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCCM2006B Apply basic levelling procedures

Modification History

Minor editorial and formatting changes
Equivalent to CPCCCM2006A

Unit Descriptor

This unit of competency specifies the outcomes required to carry out levelling in a single plane for the purpose of establishing correct and accurate set-out of building components. It includes the set-up, testing and use of levelling devices, and establishing and transferring heights using a range of levelling equipment.

Application of the Unit

This unit of competency supports achievement of skills to undertake levelling work using a variety of methods and equipment commonly used in the construction industry, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** to prepare for ***basic levelling activities***.
		1.2	***Safety (OHS)*** requirements are followed in accordance with safety plans and policies.
		1.3	Signage and barricade requirements are identified and implemented.
		1.4	***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
		1.5	***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2	Set up and use levelling device.	2.1	***Heights or levels*** to be transferred/established are identified from project plans or instructions for ***levelling procedures***.
		2.2	***Levelling devices*** are set up and tested in accordance with manufacturer instructions, including ***levelling device tolerance checks***.
		2.3	Levelling staffs are accurately applied.
		2.4	Levels are shot and heights transferred to required location and marked and/or recorded to job

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			requirements.
		2.5	Results of levelling procedure are documented to organisational requirements.
3	Clean up.	3.1	Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
		3.2	Tools and equipment are cleaned, checked, maintained, including ***levelling device operator maintenance***, and stored in accordance with manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- application and requirements for line, level and plumb in construction projects
- basic construction processes
- basic mathematical techniques associated with levelling
- construction terminology
- job safety analysis (JSA) and safe work method statements
- levelling device types, characteristics, technical capabilities and limitations
- levelling techniques related to essential tasks
- processes for interpreting engineering drawings and sketches

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- processes for setting out
- project quality requirements
- site and equipment safety (OHS) requirements
- site isolation and traffic control responsibilities and authorities
- symbols and construction terminology of construction plans.

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan, OHS regulations and state and territory legislation applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools and equipment
- communicate and work effectively and safely with others
- transfer levels and record differences in height on one project to job specifications using:
  - a spirit level and straight edge
  - levelling with water technique
  - laser levelling devices
  - optical levelling devices
- confirm accuracy of the readings taken for all above, including set-up and movement of device in

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two locations
- conduct a two peg test with an automatic level to confirm that instrument meets manufacturers' tolerances
- accurately record the results of each levelling procedure to organisational requirements.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning

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knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions

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- maps
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements.
- plans and specifications
- relevant Australian standards
- safe work procedures related to performing levelling
- signage
- verbal or written and graphical instructions
- work bulletins
- work schedules.

Basic levelling activities may include:

- setting up of devices
- recording of heights or level and the transfer of data points
- transferring levels/heights for formwork
- shooting levels for concrete slabs
- recording ground levels at respective critical set out points
- recording slab or pad levels for placement of steel columns or masonry piers
- recording or checking levels in drainage
- positioning offsets and recovery pegs for construction projects.

Safety (OHS) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- handling of materials
- hazard control
- hazardous materials and substances
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - power cables, including overhead service trays, cables and conduits
  - restricted access barriers
  - surrounding structures
  - traffic control

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- trip hazards
- work site visitors and the public
- working at heights
- working in confined spaces
- working in proximity to others
- working with dangerous materials
- organisational first aid
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- use of firefighting equipment
- use of tools and equipment
- workplace environment and safety.

Tools and equipment may include:

- chalk lines
- hammers
- marking equipment
- measuring tapes and rules, spirit levels and straight edges
- plumb bobs
- saws, bolt cutters and saw stools
- signage for laser levelling
- string lines and laser targets
- water levels, laser levels, optical levels and automatic levels
- wooden and steel pegs.

Environmental requirements include:

- clean-up management
- waste management.

Statutory and regulatory authorities include:

- federal, state and local authorities administering applicable Acts, regulations and codes of practice.

Heights or levels may be indicated by:

- chalk or nail mark and marks on vertical surface
- datum and survey peg
- drawing or sketch
- verbal or written instructions.

Levelling procedures:

- include open or closed traverse using height of

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	instrument or rise and fall methods of reduction • may be completed in a team arrangement.
Levelling devices may include:	• automatic level • inclinometers • laser level • levelling staff • levelling using water • optical level • string line • survey pegs • tape measure • batter pegs or boards • plumb bob.
Levelling device tolerance checks may include:	• reverse readings for spirit level • two peg test for automatic level.

Levelling device operator maintenance:	• includes:
	  • authorised servicing
	  • cleaning
	  • monitoring, recording and reporting of faults
	• may include conduct of authorised minor replacements.

Unit Sector(s)

Functional area

Unit sector Construction

Custom Content Section

Not applicable.

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CPCCCM2007B Use explosive power tools

Modification History

Minor changes made to range statement, including addition of photovoltaic (solar) panels
Equivalent to CPCCCM2007A

Unit Descriptor

This unit of competency specifies the outcomes required to apply safe and effective operation of explosive power tools (EPT), used to fasten materials or fix fasteners to bases. It includes both direct action and indirect action explosive powered fastening tools.

Application of the Unit

This unit of competency supports achievement of skills to safely and effectively use a range of EPT used in the construction industry.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** for ***planning and preparation***.
		1.2	***Safety (OHS)*** requirements are followed in accordance with safety plans and policies.
		1.3	Signage and barricade requirements are identified and implemented.
		1.4	Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
		1.5	Material quantity requirements are calculated in accordance with plans and specifications.
		1.6	***Materials*** appropriate to work application are identified, obtained, prepared, safely handled and located ready for use.
		1.7	***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2	Set out fasteners.	2.1	***Minimum distances for set out*** from edge of substrate material are adhered to in accordance with legislation, regulations and codes of practice.
		2.2	Material is located and temporarily held or fixed into designed position according to detailed drawings.
3	Use EPT.	3.1	EPT is checked for operation according to manufacturer specifications and safety (OHS) requirements for ***use of EPT***.
		3.2	Fastener is selected according to requirements of job.
		3.3	Charge is selected to assessed requirements for material, base and penetration.

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		3.4	***Attachments*** and accessories are installed to EPT in accordance with manufacturer specifications and safety (OHS) requirements.
		3.5	***Fastener and charge*** in EPT are located to manufacturer specifications.
		3.6	EPT operation is carried out and fastener is fixed into place in accordance with manufacturer recommendations, legislation, regulations and codes of practice.
		3.7	Fastening penetration is checked and appropriate depth into material is applied.
		3.8	Power regulating device is adjusted for conditions.
		3.9	Misfire procedures are carried out according to manufacturer recommendations, legislation, regulations and codes of practice.
		3.10	Temporary holding and fixings are removed without damage to material.
4	Secure and store equipment and charges.	4.1	Charges are stored in designated container in accordance with legislation, regulations and codes of practice and used charges are recorded.
		4.2	Unused fasteners, the EPT and attachments are stored in a carry case in line with manufacturer recommendations.
		4.3	Logbook is checked and maintenance recorded according to manufacturer recommendations.
5	Maintain EPT and kit.	5.1	Safety features of tools are checked for serviceability in accordance with manufacturer operating manual.
		5.2	Tools are cleaned and lubricated to manufacturer recommendations.
		5.3	Periodic maintenance service is carried out to manufacturer specifications.
		5.4	Diminished stocks of charges and fasteners are replenished to designed effectiveness of EPT kit.

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6	Clean up.	6.1	Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
		6.2	Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record maintenance in logbook
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- construction terminology
- EPT materials
- EPT charges and fasteners
- equipment safety manuals and instructions
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management

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- plans, specifications and drawings
- processes for the calculation of material requirements
- quality requirements
- relevant Acts, regulations and codes of practice
- security and storage procedures for equipment and charges
- types, characteristics, uses and limitations of plant, tools and equipment
- workplace and equipment safety requirements.

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to:
	• locate, interpret and apply relevant information, standards and specifications
	• comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
	• comply with organisational policies and procedures, including quality requirements
	• safely and effectively use tools and equipment
	• communicate and work effectively and safely with others
	• fix metal or timber to a steel, concrete or masonry base on one project of each to job specifications, including:
	  • completion of stripping and assembly of the tool
	  • completing log of serviceability
	  • maintaining and cleaning

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- selecting charges and fasteners applicable to base material and material being fixed
- misfire procedures
- using attachments
- complying with storage and security regulations and OHS requirements for the working environment
- selecting signage
- test fire.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to

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confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches

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- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements pertaining to using EPT
- relevant Australian standards
- safe work procedures related to using EPT
- signage
- verbal or written and graphical instructions
- work bulletins
- work schedules.

Planning and preparation include:

- work site inspection
- equipment defect identification
- assessment of conditions and hazards
- determination of work requirements.

Safety (OHS) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- handling of materials
- hazard control
- hazardous materials and substances
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - photovoltaic (solar) panels
  - power cables, including overhead service trays, cables and conduits
  - restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - work site visitors and the public

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- working at heights
- working in confined spaces
- working in proximity to others
- working with dangerous materials
- organisational first aid
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- use of firefighting equipment
- use of tools and equipment
- workplace environment and safety.

Tools and equipment may include:

- direct action EPT
- indirect action EPT
- clamps and levels.

Materials include:

- timber
- metals
- patented fasteners.

Environmental requirements include:

- clean-up management
- noise and dust
- vibration
- waste management.

Statutory and regulatory authorities include:

- federal, state and local authorities administering applicable Acts, regulations and codes of practice.

Minimum distance for set out of fasteners is to be in accordance with:

- regulated minimum distances
- bases, including concrete, masonry or steel.

Use of EPT includes:

- stripping and assembling tools
- completing log of serviceability
- maintaining and cleaning tools
- selecting charges and fasteners applicable to the base material and material being fixed
- misfire procedures
- using attachments
- complying with storage and security regulations

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	and OHS requirements for the working environment • selecting signage • test fire.
Attachments include:	• channel, rebate and other manufacturer attachments.
Fastener and charge include:	• firing a test shot with misfire procedures, complying with the regulated safety procedure for misfire.

Unit Sector(s)

Functional area

Unit sector Construction

Custom Content Section

Not applicable.

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CPCCCM2008A Erect and dismantle restricted height scaffolding

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to erect and dismantle restricted height scaffolding to provide work platforms for various occupational applications. It includes placement of safety barriers and only involves modular scaffolding restricted to a height of 4 metres.

Application of the Unit

Application of the unit

This unit of competency supports achievement of skills to handle, erect and dismantle a range of restricted height scaffolding systems, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained from relevant sources of ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, ***tools and equipment*** are selected to carry out tasks consistent with job requirements, are checked for serviceability, and any faults are rectified or reported prior to commencement. 1.5. ***Scaffolding*** quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Erect scaffolding.	2.1. ***Purpose for scaffolding*** is confirmed and associated work tasks are identified. 2.2. Expected loading on scaffold and supporting structure is determined using load tables. 2.3. Site access and egress routes are identified. 2.4. Scaffolding and components are selected and inspected with damaged components labelled and rejected or repaired. 2.5. Adequate footing is established in accordance with Australian standard for scaffolding. 2.6. Scaffolding is erected in accordance with regulations, planned hazard prevention and control measures, acceptable safe work practices and manufacturer requirements.
3. Inspect, repair and alter scaffolding.	3.1. Critical structural and safety areas of scaffolding are inspected for damage, corrosion and wear. 3.2. Current use of scaffolding is checked for compliance with type of scaffolding equipment.

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ELEMENT	PERFORMANCE CRITERIA
	3.3. Inspection log and handover are completed.
	3.4. Scaffolding is reviewed to determine if changes or modifications were scheduled as per original planning.
	3.5. Alteration or repair is carried out where specified.
4. Dismantle scaffolding.	4.1. Scaffolding is dismantled using reverse procedure as for erection.
5. Clean up.	5.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	5.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record maintenance in logbooks
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and make calculations

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REQUIRED SKILLS AND KNOWLEDGE

- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- general construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- processes for the calculation of material requirements
- quality requirements
- relevant Acts, regulations and codes of practice
- scaffolding equipment
- scaffolding techniques
- shifting devices
- types, characteristics, uses and limitations of plant, tools and equipment
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to:
	• locate, interpret and apply relevant information, standards and specifications
	• comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
	• comply with organisational policies and procedures, including quality requirements
	• safely and effectively use tools, plant and equipment
	• communicate and work effectively and safely with others
	• complete planning, erection and dismantling of a modular scaffolding system, in accordance with JSA and safe work method statements and regulations, including a minimum of:
	  • three bays (one with a return)
	  • one lift with ladder
	  • fall and edge protection.

Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements.

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EVIDENCE GUIDE

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances

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EVIDENCE GUIDE

assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- engineers' design specifications and manufacturer specifications and instructions, where specified
- instructions issued by authorised organisational or external personnel
- memos
- MSDS
- regulatory and legislative requirements pertaining to erecting and dismantling restricted height scaffolding

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RANGE STATEMENT

	• relevant Australian standards • safe work procedures related to erecting and dismantling restricted height scaffolding • signage • verbal or written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• work site inspection, equipment defect identification, assessment of conditions and hazards, and determination of work requirements • erection of scaffolding to a maximum height of 4 metres, including placement, sequencing, squaring, levelling and the reverse for dismantling • establishment of footings, including review of JSAs to determine bearing capacity of ground or working surfaces • alteration and repair, which may be required due to storm damage, accidents, misuse and process changes.

Safety (***OHS***) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces

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RANGE STATEMENT

	• working in proximity to others • working with dangerous materials • organisational first aid • personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices • use of firefighting equipment • use of tools and equipment • workplace environment and safety.
Tools and equipment include:	• aluminium modular scaffolding equipment • hammers • ladders • scaffolding planks • shovels and spanners • spirit levels • steel box spanners • tape measures.
Scaffolding type and quantity requirements:	• types of restricted height scaffolding may include systems scaffolding, A frame, H frame, tube and coupler, and aluminium (and modular to a maximum height of 4 metres).
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Environmental requirements include:	• clean-up protection • noise and dust • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Purpose for scaffolding includes:	• work platforms for various occupational applications.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCCM2008B Erect and dismantle restricted height scaffolding

Modification History

Photovoltaic (solar) panels added to range statement
Equivalent to CPCCCM2008A

Unit Descriptor

This unit of competency specifies the outcomes required to erect and dismantle restricted height scaffolding to provide work platforms for various occupational applications. It includes placement of safety barriers and only involves modular scaffolding restricted to a height of 4 metres.

Application of the Unit

This unit of competency supports achievement of skills to handle, erect and dismantle a range of restricted height scaffolding systems, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions, including plans, specifications, quality requirements and operational details, are obtained from relevant sources of ***information***, confirmed and applied for ***planning and preparation*** purposes.
		1.2	***Workplace health and safety (WHS)*** requirements are followed in accordance with safety plans and policies.
		1.3	Signage and barricade requirements are identified and implemented.
		1.4	Plant, ***tools and equipment*** are selected to carry out tasks consistent with job requirements, are checked for serviceability, and any faults are rectified or reported prior to commencement.
		1.5	***Scaffolding*** quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
		1.6	Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
		1.7	***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.

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2	Erect scaffolding.	2.1	***Purpose for scaffolding*** is confirmed and associated work tasks are identified.
		2.2	Expected loading on scaffold and supporting structure is determined using load tables.
		2.3	Site access and egress routes are identified.
		2.4	Scaffolding and components are selected and inspected with damaged components labelled and rejected or repaired.
		2.5	Adequate footing is established in accordance with Australian standard for scaffolding.
		2.6	Scaffolding is erected in accordance with regulations, planned hazard prevention and control measures, acceptable safe work practices and manufacturer requirements.
3	Inspect, repair and alter scaffolding.	3.1	Critical structural and safety areas of scaffolding are inspected for damage, corrosion and wear.
		3.2	Current use of scaffolding is checked for compliance with type of scaffolding equipment.
		3.3	Inspection log and handover are completed.
		3.4	Scaffolding is reviewed to determine if changes or modifications were scheduled as per original planning.
		3.5	Alteration or repair is carried out where specified.
4	Dismantle scaffolding.	4.1	Scaffolding is dismantled using reverse procedure as for erection.
5	Clean up.	5.1	Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
		5.2	Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record maintenance in logbooks
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- general construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- processes for the calculation of material requirements
- quality requirements

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- relevant Acts, regulations and codes of practice
- scaffolding equipment
- scaffolding techniques
- shifting devices
- types, characteristics, uses and limitations of plant, tools and equipment
- workplace and equipment safety requirements.

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- complete planning, erection and dismantling of a modular scaffolding system, in accordance with JSA and safe work method statements and regulations, including a minimum of:
  - three bays (one with a return)
  - one lift with ladder
  - fall and edge protection.

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Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

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Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- engineers' design specifications and manufacturer specifications and instructions, where specified
- instructions issued by authorised organisational or external personnel
- memos
- MSDS
- regulatory and legislative requirements pertaining to erecting and dismantling restricted height

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scaffolding
- relevant Australian standards
- safe work procedures related to erecting and dismantling restricted height scaffolding
- signage
- verbal or written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Planning and preparation include:

- work site inspection, equipment defect identification, assessment of conditions and hazards, and determination of work requirements
- erection of scaffolding to a maximum height of 4 metres, including placement, sequencing, squaring, levelling and the reverse for dismantling
- establishment of footings, including review of JSAs to determine bearing capacity of ground or working surfaces
- alteration and repair, which may be required due to storm damage, accidents, misuse and process changes.

Workplace health and safety is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- handling of materials
- hazard control
- hazardous materials and substances
  - safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - photovoltaic (solar) panels
  - power cables, including overhead service trays, cables and conduits
  - restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - work site visitors and the public
  - working at heights
  - working in confined spaces

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- working in proximity to others
- working with dangerous materials
- organisational first aid
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- use of firefighting equipment
- use of tools and equipment
- workplace environment and safety.

Tools and equipment include:

- aluminium modular scaffolding equipment
- hammers
- ladders
- scaffolding planks
- shovels and spanners
- spirit levels
- steel box spanners
- tape measures.

Scaffolding type and quantity requirements:

- types of restricted height scaffolding may include systems scaffolding, A frame, H frame, tube and coupler, and aluminium (and modular to a maximum height of 4 metres).

Quality requirements include relevant regulations, including:

- Australian standards
- internal company quality policy and standards
- manufacturer specifications, where specified
- workplace operations and procedures.

Environmental requirements include:

- clean-up protection
- noise and dust
- waste management.

Statutory and regulatory authorities include:

- federal, state and local authorities administering applicable Acts, regulations and codes of practice.

Purpose for scaffolding includes:

- work platforms for various occupational applications.

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Unit Sector(s)

Functional area

Unit sector Construction

Custom Content Section

Not applicable.

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CPCCCM2009A Carry out basic demolition

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to remove components from single storey buildings and structures using basic demolition techniques. It includes the preparation of the site for the demolition process and the removal of components.

Application of the Unit

Application of the unit

This unit of competency supports achievement of skills for the preparation and removal of building components from a demolition site in accordance with a site demolition plan.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** for planning of ***basic demolition processes***. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, ***tools and equipment*** are selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement. 1.5. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Prepare demolition site.	2.1. Requirements of the ***site demolition plan*** are interpreted in accordance with workplace procedures and ***construction type***. 2.2. Property/dilapidation survey is completed to assess condition of work site and surrounds prior to work commencing and for ***preparation of work areas***. 2.3. Confirmation is obtained from supervisor/regulatory authorities that all existing ***services*** have been disconnected before commencing ***demolition tasks***. 2.4. Hazardous material is identified for separate handling in accordance with workplace requirements and instructions.
3. Remove components.	3.1. ***Building components*** are removed in a directed sequence in accordance with site demolition plan, demolition method statement, standards and workplace procedures. 3.2. Removed components are relocated to storage or disposal area in accordance with workplace requirements. 3.3. Materials and building component parts are safely and effectively handled using selected material handling techniques. 3.4. Materials and components identified for salvaging are handled, stored and stacked ready for transport in

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ELEMENT	PERFORMANCE CRITERIA
	accordance with standard material handling practices and workplace procedures.
4. Clean up.	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specifications.
	4.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones

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REQUIRED SKILLS AND KNOWLEDGE

- voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- basic demolition processes and techniques
- construction terminology
- hazards associated with the conduct of manual demolition tasks
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- quality requirements
- types, characteristics, uses and limitations of tools and equipment involved in the conduct of manual demolition processes
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum, given a site demolition plan and instructions, remove the fixtures and fittings, ceiling, and external and internal non-load bearing walls; and clean up, disposing or salvaging materials, ensuring:
  - correct identification of requirement and conduct of demolition
  - confirmation that wall or structure is not load bearing
  - identification and correct response to services
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes.

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EVIDENCE GUIDE

Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments.

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EVIDENCE GUIDE

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel

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RANGE STATEMENT

	• manufacturer specifications and instructions where specified • memos • MSDS • organisation work specifications and requirements • plans and specifications • regulatory and legislative requirements pertaining to the conduct of basic demolition processes • relevant Australian standards • safe work procedures related to the conduct of basic demolition processes • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Basic demolition processes include:	• dismantling or demolishing and removing materials and component parts of a building using only hand tools and small plant and equipment.

Safety (***OHS***) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including emergency shutdown and stopping of equipment, extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • overhead lines and cables
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • underground services and utilities
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces

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RANGE STATEMENT

	• working in proximity to others • working with dangerous materials • organisational first aid • personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices • use of firefighting equipment • use of tools and equipment • workplace environment and safety.
Tools and equipment include:	• bars (crow and pinch), bolt cutters, sledge hammers, spanners and wrenches, chisels, hacksaws, handsaws, hammers and pliers • picks and mattocks • power drills and saws, pneumatic tools, concrete saws, angle grinders, compressors and electric testers • shovels, spades, brooms and wheelbarrows • signs and barricades • water hoses and attachments • scaffolds and elevated work platforms.
Environmental requirements include:	• clean-up protection • noise and dust • sedimentation control • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Site demolition plan includes:	• documentation of the demolition process • safe work practices.
Construction type includes:	• brickwork, blockwork, brick veneer and concrete • timber framed and light steel framed structures.
Preparation of work areas include:	• assessing conditions of work site and surrounds • communicating with those who may be affected by the demolition task • identifying hazardous materials • identifying positions of hoses and cables, clear of hazards

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RANGE STATEMENT

	• locating signage and barricades • providing site safety.
Services include:	• electricity • gas • telephone and computer/communication • water.
Demolition tasks can be performed on:	• existing structure being renovated or extended, which involves complete or partial removal of components • new construction site.

Building components include:	• concrete/masonry areas, including:
	  • edge strips
	  • pads
	  • paths
	  • retaining walls and fences
	  • slabs
	• external sections of buildings, including:
	  • attached structures, carports and sheds
	  • non-load bearing walls
	  • patios and decks
	• fixtures and fittings
	• internal sections of buildings, including:
	  • built-in components
	  • ceilings
	  • cladding
	  • flooring
	  • non-load bearing partition walling
	  • wet area components.

Unit Sector(s)

Unit sector Construction

Co-requisite units

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Co-requisite units Nil

Functional area

Functional area

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CPCCCM2010B Work safely at heights

Modification History

Photovoltaic (solar) panels added to range statement
Equivalent to CPCCCM2010A

Unit Descriptor

This unit of competency specifies the outcomes required to work safely on construction sites where the work activity involves working above 1.5 metres from ground level and where fall protection measures are required.

Application of the Unit

Construction work is undertaken on domestic and commercial work sites within new construction, renovation or refurbishment, and maintenance.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	Identify work area requirements.	1.1	Site of proposed ***work at heights*** is identified from relevant ***information***.
		1.2	Method of accessing work area is identified.
		1.3	Tasks to be completed are identified from work orders and supervisor instructions.
		1.4	Fall protection equipment is identified if required by site job ***workplace health and safety (WHS)*** analysis and ***statutory and regulatory*** requirements.
		1.5	Approved methods of moving tools and equipment to work area are identified to minimise potential of falling objects, removal of scaffold components, inappropriate carrying of materials on ladders, and excessive bending or twisting in pass-up situations.
2	Access work area.	2.1	Fall protection equipment where required is correctly fitted, adjusted and anchored.
		2.2	Arrangements are made to appropriately install required equipment taking account of all potential ***hazards***.
		2.3	Appropriate methods are used to access work area for self, ***tools and equipment***, and ***materials***.
		2.4	Tools and materials are placed to eliminate or at least minimise the risk of items being knocked down.
3	Conduct work tasks.	3.1	Work is conducted following workplace approved procedures.
		3.2	Fall protection equipment is kept in place and adjusted appropriately to cater for movement during work.
		3.3	Scaffold components and fall barriers are kept in place during work.
		3.4	Egress from work area is completed following work site supervisor approved methods for self, tools, materials and ***environmental requirements***.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- quality requirements
- types, characteristics, uses and limitation of plant, tools and equipment
- workplace and equipment safety requirements.

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment This unit of competency could be assessed in the

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workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan, OHS regulations and state and territory legislation applicable to workplace operations
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- select and use appropriate height access and fall protection equipment and work methods, including inspecting fall protection equipment, scaffold and fall barriers for faults
- apply knowledge of industry products to identify:
  - manual handling risks
  - types of lifting and support structures approved for use
- modify work activities to cater for variations in work site procedures, contexts and environment and use appropriate behaviour for safe work at heights
- use safe handling requirements, based on information provided, for equipment, products and materials.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions

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- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

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Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work at heights includes:

- assessment of conditions and hazards
- determination of work requirements
- identification of equipment defects
- inspection of work sites.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- material safety data sheets (MSDS)
- memos
- signage
- verbal or written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Workplace health and safety is to be in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- handling of materials
- hazard control
- hazardous materials and substances
- safe operating procedures, including the conduct of

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operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - photovoltaic (solar) panels
  - power cables, including overhead service trays, cables and conduits
  - restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - work site visitors and the public
  - working in confined spaces
  - working in proximity to others
  - working with dangerous materials
- organisational first aid
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- relevant OHS legislation applying in the jurisdiction where work is carried out, including:
  - AS6001 - 1999 Working platforms for domestic application
  - AS1576 - Scaffolding
  - AS/NZS4576 - 1995 Guidelines for scaffolding
- use of tools and equipment
- workplace environment and safety.

Statutory and regulatory authorities include:

- federal, state and local authorities administering applicable Acts, regulations and codes of practice.

Hazards include:

- air temperature
- construction activity involving other workers and contractors
- dust and vapours
- electrical equipment
- energy sources
- equipment and materials
- hazardous materials
- light
- manual handling

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- moisture
- noise
- pholtovoltaic (solar) panels
- stationary and moving plant
- work at heights.

Tools and equipment include:

- air compressors and hoses
- hand and power tools
- nail guns
- power leads
- scaffolding.

Materials include:

- materials used on the construction work site.

Environmental requirements include:

- clean-up management
- noise and dust
- vibration
- waste management.

Unit Sector(s)

Functional area

Unit sector Construction

Custom Content Section

Not applicable.

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CPCCCM3001C Operate elevated work platforms

Modification History

Prerequisite unit identifier code updated
Equivalent to CPCCCM3001B

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to safely and effectively operate some types of elevated work platforms (EWPs) in a variety of different terrains and situations to access isolated work areas. The unit includes locating, setting up, operating and shutting down EWPs.

In addition to achievement of this competency, an EWP operator may need to obtain additional certification of training and experience before being allowed to operate the equipment.

Application of the Unit

Application of the unit

This unit of competency assists in the safe and effective operation of electrical, hydraulic or mechanical EWPs. The unit does not cover powered telescoping devices, hinged devices or articulate d devices, or any combination of these used to support a platform on which personnel, equipment and materials may be elevated to perform work and which has a boom length of 11 metres or more. An OHS authority Certificate of Competency may be required to operate boom type EWPs of 11 metres or more in some jurisdictions.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

CPCCCM2010B	Work safely at heights
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. ***Work planning and preparation*** are conducted using plans, specifications, quality requirements and operational details, obtained, confirmed and applied from relevant ***information***.
	1.2. ***Safety*** (***OHS***) requirements for the ***types of EWP*** to be operated are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. Plant, ***tools and equipment*** and ***personal protective equipment*** are selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
	1.5. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.6. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Conduct routine checks of platform.	2.1. Power source is determined and connected to platform equipment according to manufacturer specifications.
	2.2. Routine pre-operational equipment checks are carried out in accordance with checklist from operator's manual or manufacturer specifications.
	2.3. Equipment is switched on in accordance with start up procedures and controls are checked for correct operation and ease of movement.
	2.4. ***Emergency safety devices*** are checked to comply with instructions from operator's manual and checked for manual operation.
	2.5. Work location is checked for level ground or floor surface to determine stabilising and safe working area requirements.
3. Locate equipment in place for work application.	3.1. Platform is positioned for work application and stabilisers are engaged to set equipment base level into place according to ***safe operating procedures***.
	3.2. Tools, equipment and materials are placed into bucket or on platform according to job application

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ELEMENT	PERFORMANCE CRITERIA
	requirements.
4. Elevate platform to work location.	4.1. ***Harness*** is fitted securely and lanyard connected to attachment point. 4.2. ***EWP operation*** and controls are operated to manufacturer recommendations and platform is elevated to work position. 4.3. Power is switched off where specified and locking devices are engaged according to operator's manual. 4.4. Work is carried out to job specification and safety (OHS) requirements of operator's manual.
5. Lower platform and shut down.	5.1. Controls are operated to manufacturer recommendations and platform is lowered to down position. 5.2. Shut down procedures are carried out to operator's manual and equipment is switched off.
6. Clean up.	6.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 6.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices. 6.3. Work completion procedures are applied and relevant personnel notified that work is finished.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:

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REQUIRED SKILLS AND KNOWLEDGE

    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to complete inspection log and handover
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- designs, functions and operational limitations of EWP equipment
- EWP equipment types and OHS authority certification of competency requirements
- EWP techniques
- fault finding and identification
- general construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- processes for the calculation of load mass requirements
- quality requirements
- relevant Acts, regulations and codes of practice
- safe working at heights
- signalling methods and communications
- types, characteristics, uses and limitations of plant, tools and equipment
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools, plant and equipment • communicate and work effectively and safely with others • complete set up and operation of a range of EWPs as listed in the range statement, including all functions.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions

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EVIDENCE GUIDE

- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability

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EVIDENCE GUIDE

and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work planning and preparation include:

- assessment of conditions and hazards
- consideration that EWPs must not be operated anywhere with overhead powerlines above, or within specified clearance distances set out in documentation such as Electrical Safety - Power line NO GO Zones, unless permission has been obtained from the power authority and a JSA has been developed
- determination of work requirements
- equipment defect identification
- work site inspection.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions

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RANGE STATEMENT

	where specified • MSDS • memos • regulatory and legislative requirements pertaining to EWPs • relevant Australian standards • safe work procedures related to operating EWPs, including the safe working load written on the EWP which must be checked to ensure it is not exceeded • signage • verbal or written and graphical instructions • work bulletins • work schedules, plans and specifications.
Safety (***OHS***) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• procedures related to equipment operation, including emergency shutdown and stopping, extinguishing equipment fires, organisational first aid requirements and evacuation • handling of materials • hazard control • hazardous materials and substances • organisational first aid • personal protective clothing and equipment • use of firefighting equipment • use of tools and equipment • workplace environment and safety.

Types of EWP:	• EWPs include scissor lifts, boom and knuckle boom lifts with a boom length under 11 metres
	• EWPs are classified as:
	  • trailer mounted boom lift (TL)
	  • self-propelled boom lift (BL)
	  • vertical lift (VL)
	  • scissor lift (SL)
	  • truck-mounted boom lift (TM), which is not covered by this unit of competency.

Tools and equipment include:	• EWPs, extension leads, logbooks, service manuals, operation manuals, safety harnesses and lanyards • special attachments, which may have to be installed if equipment is to be shifted with the EWP, as lifting loads via cables and ropes

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RANGE STATEMENT

	from an EWP is not permitted.
Personal protective equipment includes:	• that prescribed under legislation, regulations, codes of practice and workplace policies and practices.
Environmental requirements include:	• clean-up protection • noise and dust • sedimentation control • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Emergency safety devices include:	• bleed valves • electronic override • emergency descent devices • ground controls • hydraulic accumulators.

Safe operating procedures include:	• conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	  • working with dangerous materials
	• not using slab terrain EWPs on any surface other than concrete or level asphalt.

Harnesses include:	• energy or shock absorbers that must be used with all fall arrest lanyard, harness and inertia reel systems • full body rescue harness • lanyards and inertia reels, which should be attached to the harness installed so that the

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RANGE STATEMENT

	maximum distance a person equipped with a harness would free fall before the fall arrest system takes effect is 2 metres.
EWP operation includes:	• boom up and down • operate attachments • operate outriggers • slew left and right • telescope in and out.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCCM3002A Operate a truck mounted loading crane

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to safely and effectively operate a truck mounted loading crane to load and unload building products delivered from supplier to the construction site. It includes set-up, operation, control and shut down of the crane.

Application of the Unit

Application of the unit

This unit of competency supports achievement of skills to safely and efficiently use a truck mounted loading crane to handle construction materials, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** for ***planning and preparation***. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement. 1.5. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Truck mounted crane is set up and operated.	2.1. ***Truck mounted crane*** is positioned at the designated drop off point. 2.2. Truck is positioned to ensure a level surface to operate the crane from. 2.3. Crane is activated and manoeuvred to its operating position from its lock down position. 2.4. Crane movements are checked for ***safe crane operations***. 2.5. Load is prepared for lifting in accordance with crane, truck and dogging requirements. 2.6. Site is confirmed as clear and safe to receive or dispatch the load. 2.7. Load is manoeuvred to position using the control levers to manufacturer specifications. 2.8. Load is continually monitored throughout its travel. 2.9. Crane is shut down and returned to its lock down position.
3. Clean up.	3.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 3.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- construction terminology
- designs and functions of truck mounted loading cranes
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- processes for the calculation of load mass requirements

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REQUIRED SKILLS AND KNOWLEDGE

- quality requirements
- relevant Acts, regulations and codes of practice
- slinging equipment
- truck mounted crane techniques
- types, characteristics, uses and limitations of plant, tools and equipment
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- complete a set up and operation of a truck mounted crane, including all functions to their maximum extension in the loading and unloading of at least two full loads of building and construction materials and products.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the

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EVIDENCE GUIDE

mandatory task requirements

- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at

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EVIDENCE GUIDE

the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements pertaining to truck mounted cranes
- relevant Australian standards

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RANGE STATEMENT

	• safe work procedures related to operating truck mounted cranes • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Planning and preparation include:	• work site inspection • equipment defect identification • assessment of conditions and hazards • determination of work requirements.

Safety (***OHS***) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures related to equipment operation include emergency shutdown and stopping, extinguishing equipment fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	  • working with dangerous materials
	• organisational first aid
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environment and safety.

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RANGE STATEMENT

Tools and equipment include:	• truck mounted cranes • allocated slinging equipment.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Truck mounted crane includes:	• a crane mounted on a semi-trailer or delivery truck, including cranes mounted on other vehicles • are generally used for loading and unloading building and construction products, however, larger versions are used for loading and unloading containers • may have electrical, hydraulic and mechanical operating systems.
Safe crane operations include:	• boom up and down • operate attachments • operate outriggers • slew left and right • telescope in and out • load masses not exceeding the working capacity of the crane and recommended manufacturer limits.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCCM3003A Work safely around power sources, services and assets

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to work with or operate plant in or around close proximity of power sources, services and assets for the general safety of personnel and equipment. It includes all occupational areas that may require working near electricity.

Application of the Unit

Application of the unit

This unit of competency supports achievement of skills and knowledge to work safely around power sources when undertaking construction tasks.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant ***information*** for ***planning and preparation***.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. ***Plant***, ***tools and equipment*** are selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
	1.5. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Apply safe work practices.	2.1. Relevant authorities are contacted to identify ***electrical sources*** and type.
	2.2. Plant is positioned according to work method statement and job safety analyses (JSAs).
	2.3. Plant procedures are followed to comply with work method statement and JSAs.
	2.4. Work is conducted in or around the power source, service or asset.
	2.5. Personnel, plant and equipment are retracted from powered area following safe work method statement and JSAs.
3. Clean up.	3.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	3.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.
	3.3. Work completion procedures are applied and relevant personnel are notified that work is finished.

Required Skills and Knowledge

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - identify electrical source and type from relevant authorities
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and make calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- construction terminology
- electrical safety on construction work sites
- first aid including cardiopulmonary resuscitation (CPR)
- JSA and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- quality requirements
- site specific emergency procedures
- types, characteristics, uses and limitations of plant, tools and equipment

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REQUIRED SKILLS AND KNOWLEDGE

- working at heights
- working with electrical power techniques
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools, plant and equipment • communicate and work effectively and safely with others • contact relevant authorities • apply work method statements and JSAs to oversee plant positioning and operation for one project, including erection and/or placement of barriers and safeguards.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the

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EVIDENCE GUIDE

	mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at

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EVIDENCE GUIDE

the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- verbal or written and graphical instructions
- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements pertaining to working safely around power

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RANGE STATEMENT

	• relevant Australian standards • safe work procedures related to working safely around power • signage • work bulletins • work schedules.
Planning and preparation include:	• work site inspection • equipment defect identification • assessment of conditions and hazards • determination of work requirements.

Safety (***OHS***) is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling of materials
	• hazard control
	• hazardous materials and substances
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	  • working with dangerous materials
	• organisational first aid
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environment and safety.

Signage and barricade	• barricades

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RANGE STATEMENT

requirements include:	• isolation • other physical barriers • site safety signage.
Plant includes:	• back hoes • booms • cranes • EWPs • excavators • scaffold.
Tools and equipment include:	• those associated with the task at hand.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities:	• include federal, state and local authorities administering applicable Acts, regulations and codes of practice • must include federal, state and local electrical authorities.
Electrical sources include:	• distribution towers • generators • poles • sub-stations • temporary services • train and tram assets • transmission towers • underground and overhead wires • underground conductors • all other services, sources and assets.

Unit Sector(s)

Unit sector Construction

Co-requisite units

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Co-requisite units Nil

Functional area

Functional area

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CPCCCO2013A Carry out concreting to simple forms

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to safely install formwork, reinforcement and place and finish concrete for the construction of minor slabs, pathways and other minor works to a specified design finish.

The unit includes positioning the truck, placing concrete from truck to work area, spreading concrete and cleaning up site.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to use concrete tools, equipment and materials with simple forms, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Materials quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Erect and strip simple formwork.	2.1. Subgrade is prepared. 2.2. ***Formwork*** design is identified from drawings. 2.3. Formwork is erected safely on commencement. 2.4. Form release agent is applied to erected formwork where specified. 2.5. Timber components are de-nailed following stripping of formwork. 2.6. Components are cleaned, stacked and stored for reuse or bundled for removal. 2.7. Formwork components are removed from site.
3. Place and tie reinforcement.	3.1. ***Reinforcing*** components are handled and positioned safely. 3.2. Reinforcing bars and mesh are positioned. 3.3. Bar chairs and spacers are positioned, with minimum edge cover.
4. Place concrete.	4.1. Formwork or excavation is cleaned of excess material and debris prior to concrete placement. 4.2. ***Concrete*** is safely transported by wheelbarrow. 4.3. Pump line/chute is controlled and concrete placed.

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ELEMENT	PERFORMANCE CRITERIA
	4.4. ***Concrete is placed*** in formwork to specified depth.
	4.5. Concrete is screeded to the alignment of formwork and project specified datums.
	4.6. Surface of ***concrete is finished*** in accordance with specifications.
5. Clean up.	5.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations and codes of practice and job specification.
	5.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- evaluating own actions and making judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- recognising procedures, following instructions, responding to change and

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REQUIRED SKILLS AND KNOWLEDGE

contributing to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems

- teamwork skills to coordinate own work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- concrete materials
- concreting techniques
- general construction terminology
- job safety analysis (JSA) and safe work method statements
- levelling techniques
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- simple formwork and reinforcing componentry
- types, characteristics, uses and limitations of plant, tools and equipment
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures including quality requirements • safely and effectively operate and use tools, plant and equipment • communicate and work effectively and safely with others • prepare subgrade; erect formwork; cut, place and tie reinforcement; place and hand screed concrete for a slab of (4 square metres is recommended) and a minimum depth of 100mm to the required finished level and job specification.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement

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EVIDENCE GUIDE

- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice,

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EVIDENCE GUIDE

with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to concreting
- relevant Australian standards
- safe work procedures relating to concreting
- signage

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RANGE STATEMENT

	• verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment:	• include:

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RANGE STATEMENT

	• brooms • chutes • edging tools • shovels • trowels • wheelbarrows • may include: • bull floats • hand floats • kibbles • line pumps • stipple devices • trowelling machines.
Quality requirements include:	• internal company quality policy and standards • manufacturer specifications where specified • relevant regulations, including Australian standards • workplace operations and procedures.
Materials:	• include: • bar chairs • bracing • edge form/boards • fabric sheet mesh • pegs • spacers • may include reinforcing bars.
Environmental requirements include:	• clean-up management • dust and noise • stormwater management • vibration • waste management.
Simple ***formwork*** includes:	• timber or steel edge form to a maximum of 100mm in depth.
Simple ***reinforcing***:	• includes: • bar chairs • fabric sheet mesh • spacers • may include:

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RANGE STATEMENT

	• reinforcing bars • trench mesh.

Simple forms of ***concrete***:	• include slabs (not requiring internal beams and piers)
	• may include:
	  • beam thickeners
	  • channels
	  • garden edges
	  • pathways
	  • post holes
	  • simple concrete aprons.

Concreting includes:	• finishing of concrete • floating of the concrete • placing of concrete • screeding, limited to include a hand screed.

Placing of concrete involves movement of concrete from the truck to the work and:	• includes:
	  • chutes
	  • wheelbarrows
	• may include:
	  • kibbles
	  • pump lines.

Finishing of concrete includes:	• broomed • hand floating • power floating • sponged • stipple device finish • trowelled • trowelling machine finish • wood floated • other project specified finish.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCCO2014A Carry out concrete work

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to carry out concreting work on general construction projects for the construction of in situ reinforced concrete structures, such as slabs and other common concrete works.

This unit includes setting out, reinforcing, erecting and dismantling formwork, and placing, finishing and curing concrete.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to use the tools, equipment and materials to carry out concrete work, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Materials quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Prepare concreting materials.	2.1. Location of steel reinforcement and formwork is determined from drawings and reinforcement schedule. 2.2. ***Reinforcement*** is checked against reinforcement drawings and specifications. 2.3. ***Formwork*** components and materials are selected consistent with job. 2.4. Fixing and fasteners are selected and used consistent with requirements of the job.
3. Set out for concrete work.	3.1. String lines are set accurately from existing pegs. 3.2. Grades are checked to ensure correct fall. 3.3. Services are identified and protected to prevent damage.
4. Construct and install reinforcement.	4.1. Reinforcing fabric and bars are cut and bent as required to project drawings and specifications. 4.2. Fabric and bars are tied or fixed to configuration from project drawings and specifications. 4.3. Stiffening rods are attached to panels as required to facilitate handling. 4.4. Reinforcement material is located in formwork and

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ELEMENT	PERFORMANCE CRITERIA
	placed on bar chairs/spacers as determined from drawings, noting clearance from formwork.
	4.5. ***Cast-in items*** are located and secured.
5. Erect formwork.	5.1. Work area is cleared and surface prepared for safe erection of formwork.
	5.2. Formwork is set out to requirements of drawings and specifications.
	5.3. Formwork is assembled and erected to specifications.
	5.4. Debris, sawdust and other waste material are safely removed from formwork.
	5.5. Form release agent is applied to manufacturer specifications.
6. Carry out concrete work.	6.1. ***Concrete*** is ***transported*** correctly with wheelbarrow and discharged into formwork, using correct manual handling techniques.
	6.2. Discharge of concrete from concrete pump line and/or chute into the formwork is controlled correctly.
	6.3. ***Concrete is placed*** correctly to instruction and screeded to specified levels and grades.
	6.4. Concrete is compacted to specification using immersion vibrator or other specified method.
	6.5. ***Concrete is finished*** and ***curing*** process applied to specifications.
	6.6. Control joints are positioned and installed to specification and to current Australian standard or codes.
	6.7. Dowel joints are positioned to specification.
	6.8. Concrete surface is adequately covered and protected.
7. Strip formwork.	7.1. Edge boxing and braces are removed carefully, safely and sequentially.
	7.2. Timber components are denailed, cleaned and stored or stacked.
	7.3. Steel components are cleaned, oiled and stored or stacked.
	7.4. Damaged formwork components are discarded after stripping.
	7.5. Screens are safely cleaned before movement, where applicable.

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ELEMENT	PERFORMANCE CRITERIA
8. Clean up.	8.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 8.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- evaluating own actions and making judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- recognising procedures, following instructions, responding to change and contributing to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- teamwork skills to coordinate own work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:

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REQUIRED SKILLS AND KNOWLEDGE

- use a range of mobile technology, such as two-way radio and mobile phones
- voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- concrete characteristics and properties
- concreting principles
- equipment types, characteristics, technical capabilities and limitations
- formwork
- general construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials handling methods
- operational, maintenance and basic diagnostic procedures
- processes for interpreting engineering drawings
- quality requirements
- site and equipment safety requirements
- site isolation and traffic control responsibilities and authorities
- steel reinforcement characteristics
- structural technology.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures including quality requirements • safely and effectively operate and use tools, plant and equipment • communicate and work effectively and safely with others • complete at least three concreting projects (each a minimum of two cubic metres of concrete), incorporating a minimum of two different finishes with at least one project containing angled formwork and bent reinforcement and all projects being completed to job specifications.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include:

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EVIDENCE GUIDE

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and

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EVIDENCE GUIDE

separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to carrying out concrete work
- relevant Australian standards
- safe work procedures relating to concreting

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RANGE STATEMENT

	• signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

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RANGE STATEMENT

Tools and equipment include:

- bolt cutters
- brushes
- buckets
- chutes
- curing agent applicator
- edging tools
- floats
- hammers
- hoses
- kibble
- mesh guillotine
- nips
- rakes
- reinforcement benders
- rods
- screeds
- short handle shovels
- shutters
- sponges
- steam generator
- tarpaulins
- tremmies
- trowels
- vibrators
- wheelbarrows.

Quality requirements include:

- internal company quality policy and standards
- manufacturer specifications where specified
- relevant regulations, including Australian standards
- workplace operations and procedures.

Materials include:

- bar chairs
- cement
- concrete blend
- curing compounds
- form release agents
- formwork components
- membranes
- pre-mix concrete
- sand
- steel reinforcing

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RANGE STATEMENT

	• vapour barriers • water.
Environmental requirements include:	• clean-up management • dust and noise • stormwater management • vibration • waste management.
Reinforcement components include:	• ligatures • mesh • reinforcement bars and rods.
Formwork includes:	• expanded polystyrene • fibreglass • masonry • plywood • steel shutters • structural cardboard • timber.
Cast-in items include:	• services and fixtures tied to the reinforcement.
Concreting work includes:	• beams • columns • footings • footpaths • lintels • pads • ramps • repairing of kerb and channel • slabs on ground • stairs • structural members • suspended slab • walls.
Transporting of concrete includes:	• crane and kibble • pre-mix truck • pumping equipment • wheelbarrow.
Placing of concrete includes:	• kibble • pumping equipment • shovelling • tremmies

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RANGE STATEMENT

	• truck placed • vibrating • wheelbarrow.
Concreting finishing techniques include:	• broom finished • brushed • bull float • mechanical trowelling machine • steel trowel • wood float.
Curing includes:	• applied moisture • coating with a membrane • curing compound • flooding • plastic sheeting • steam.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCCO2021A Handle concreting materials

Modification History

This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

- Changes to performance criteria, range statement, evidence requirements and methods of assessment
- Range of other minor editorial changes

Not equivalent to CPCCCO2011A Handle concreting materials

Unit Descriptor

This unit of competency specifies the outcomes required to safely manually handle and store concreting materials and components in preparation for concreting work, while also applying environmental management principles.
The unit includes identifying and safely handling hazardous materials and waste according to safety data sheets (SDS). It may also include working with others and as a member of a team.

Application of the Unit

This unit of competency applies to a range of domestic and commercial construction sites where concreting materials are required.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to concreting work in different states and territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions, ***work health and safety (WHS) requirements*** and other ***information*** relevant to the work are identified, confirmed and applied for ***planning and preparation*** purposes.
		1.2	***Tools and equipment*** consistent with job requirements are selected and checked for serviceability, and faults are rectified and reported before work begins.
		1.3	Material quantity requirements are identified and calculated according to plans, specifications and ***quality requirements***.
		1.4	***Materials*** appropriate to the work application are obtained, prepared, safely handled and located ready for use.
		1.5	***Environmental requirements*** are identified for the project according to environmental plans and regulatory obligations.
2	Handle and sort concrete materials and components.	2.1	On delivery to site, ***concrete materials and components*** are checked for conformity to material schedule, plans and specifications.
		2.2	Concrete materials and components are moved to specified location applying safe ***handling procedures***.
		2.3	Concrete materials and components are stacked or stockpiled for ease of identification and retrieval in line with task sequence and job location and according to job specifications.

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		2.4	Concrete materials and components are protected against damage and stored clear of access ways, for ease of retrieval and distribution.
		2.5	Components are handled and positioned ready for installation according to manufacturer recommendations, plans and specifications.
3	Handle and remove concrete materials and components on completion of task.	3.1	Hazardous material is identified and appropriate waste management procedures are applied according to SDS and requirements of ***statutory and regulatory authorities***.
		3.2	Non-toxic materials are removed using correct procedures.
		3.3	Dust suppression procedures are used to minimise health risk to work personnel and others.
4	Clean up.	4.1	Work area is cleared of remaining debris and materials according to workplace procedures.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to respond to change, such as differences in work site, and environmental and quality requirements
- numeracy skills to calculate and confirm correct quantities of materials for work tasks
- oral communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - report work site hazards to appropriate personnel, including faults in tools, equipment or materials
  - use language and concepts appropriate to cultural differences
- reading skills to:
  - interpret documentation, including drawings and specifications
  - understand written instructions, procedures and signage
  - interpret manufacturer instructions for handling tools and equipment
- writing skills to complete pre-operational checklists and simple equipment fault forms

Required knowledge

- general construction terminology
- manual handling techniques for concrete materials
- plans, drawings and specifications
- procedures for the safe handling and storage of materials, and disposal of hazardous materials
- processes for calculating material requirements
- types, characteristics, uses and limitations of tools and equipment
- types, location and use of relevant safety resources and information:
  - job safety analyses (JSA) and safe work method statements (SWMS)
  - safety data sheets
  - signage and barricades
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by performing a range of tasks in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- safely handle a range of hazardous and non-hazardous concreting materials and components in preparation for concreting work to commence
- identify and follow appropriate environmental and waste management policies and procedures for the treatment of hazardous and non-hazardous concreting materials
- locate, interpret and apply relevant information, standards and specifications relating to handling concrete materials
- comply with site safety plan and WHS procedures applicable to the work site and workplace operations
- comply with organisational policies and procedures relating to handling concrete materials while maintaining quality requirements
- safely and effectively operate and use plant, tools and equipment required to handle concreting materials
- communicate and work effectively and safely with others.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure
- realistic tasks or simulated tasks covering the mandatory task requirements
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity

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- workplace instructions relating to safe work practices and addressing hazards and emergencies
- safety data sheets.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety requirements must comply with state and territory legislation and regulations and project safety plan, and may include:

- assistance of others or the use of manual or mechanical lifting devices with handling activities where size, weight or other issues, such as disability, are a factor
- emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures
- hazard control
- hazardous materials and substances, including cement and curing agents

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- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - power cables, including overhead service trays, cables and conduits
  - signage and restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
  - working outdoors in warm climates
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Information may include:

- instructions issued by authorised organisational and external personnel
- memos
- regulatory and legislative requirements relating to handling concreting materials, including Australian standards
- safe work procedures relating to handling concreting materials
- safety data sheets
- signage
- verbal, written and diagrammatical instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Planning and preparation must include:

- assessing conditions and hazards
- determining work requirements and safety plans and procedures
- identifying and rectifying equipment defects
- inspecting work sites.

Tools and equipment may include:

- brooms
- rakes
- shovels
- tarpaulins and covers
- wheel barrows.

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Quality requirements must include:

- relevant regulations that include:
  - Australian standards
  - internal organisational quality policy and standards
  - manufacturer specifications
  - workplace operations and procedures.

Materials:

- include:
  - aggregates
  - cement
  - form release agents
  - non-toxic materials, including general concreting materials
  - sand
  - water
- may include:
  - additives
  - curing compound
  - oxides.

Environmental requirements may include:

- clean-up management
- dust suppression, including:
  - covering
  - keeping dust in the air to a minimum
  - spraying with water
  - using a vacuum cleaner
- noise control
- stormwater management
- vibration management
- waste management.

Concrete materials and components:

- must include:
  - bar chairs
  - bracing
  - plastic membrane
  - reinforcement mesh
  - spacers
  - steel and timber formwork
- may include:
  - bar steel
  - decking
  - key joints
  - push-pull props
  - reinforcement bars

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- scaffolding
- support props
- tilt panels.

Handling procedures must include:

- following SDS
- manual handling, including:
  - carrying materials using correct lifting techniques
  - controlling waste
  - using pallets.

Unit Sector(s)

Concreting

Custom Content Section

Not applicable.

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CPCCCO2022A Use and maintain concreting plant, tools and equipment

Modification History

This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

- Changes to unit title, elements, performance criteria, range statement, required skills, methods of assessment, guidance information for assessment
- Range of other minor editorial changes

Not equivalent to CPCCCO2012A Use concreting tools and equipment

Unit Descriptor

This unit of competency specifies the outcomes required to safely select and use concreting plant, tools and equipment for the completion of general concreting tasks.
The unit includes the use of hand tools, power tools, small plant and equipment. It may also include working with others and as a member of a team.

Application of the Unit

This unit of competency supports the role of those working with concrete on residential, commercial and civil construction sites.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to concreting work in different states and territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions, ***work health and safety (WHS) requirements*** and other ***information*** relevant to the work are identified, confirmed with ***relevant personnel*** and applied to ***planning and preparation***.
		1.2	***Plant, tools and equipment*** consistent with job requirements are selected and ***checked for serviceability***, and faults are rectified and reported before work begins.
		1.3	Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
		1.4	Material quantity requirements are identified, calculated and confirmed according to plans, specifications and ***quality requirements***.
		1.5	***Environmental requirements*** are identified for the project according to environmental plans and regulatory requirements.
2	Use plant, tools and equipment.	2.1	Hand tools are used that are appropriate to the task and materials according to WHS requirements.
		2.2	Plant, tools and equipment are safely and effectively used according to manufacturer recommendations and WHS requirements.

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3	Clean up.	3.1	Work area is cleared and materials disposed of, reused or recycled according to regulations, codes of practice and job specifications.
		3.2	Plant, tools and equipment are cleaned, checked, ***maintained*** and stored according to manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to respond to change, such as differences in work site, and environmental and quality requirements
- numeracy skills to:
  - calculate and confirm correct quantities of materials for work tasks
  - check levels of lubricants in tools
- oral communication skills to:
  - enable clear and direct communication regarding work instructions, using questioning to identify and confirm requirements, and share information
  - report work site hazards to appropriate personnel, including faults in tools, equipment or materials
  - use language and concepts appropriate to cultural differences
- reading skills to:
  - interpret documentation, including specifications
  - interpret manufacturer instructions for safely handling tools and equipment
  - understand written instructions, procedures and signage
- writing skills to complete equipment fault forms

Required knowledge

- environmentally friendly waste management practices applicable to the task
- general construction terminology
- processes for calculating material requirements
- quality requirements relating to each stage of the concreting process
- processes for the storage of plant, tools, equipment and material
- properties of concrete
- requirements of legislation, regulations and codes of practice that apply to the use and maintenance of concreting plant, tools and equipment, including WHS requirements
- types, location and use of relevant safety information:
  - job safety analyses (JSA) and safe work method statements (SWMS)
  - safety data sheets (SDS)
  - safety manuals and instructions for plant, tools and equipment
  - safety signage
  - environmental and work site safety plans
- types, uses and limitations of concreting plant, tools and equipment, including when to

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use particular items for different stages of concreting tasks

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by observation of correct identification, use and maintenance of concreting plant, tools and equipment appropriate to requirements in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- identify, select, use and maintain a range of concreting plant, tools and equipment in a minimum of two different work environments or conditions
- locate, interpret and apply relevant information, including manufacturer requirements for the appropriate use and maintenance of plant, tools and equipment
- comply with site safety plan and procedures
- comply with organisational policies and procedures relating to using and maintaining plant, tools and equipment while maintaining quality requirements outlined in job specifications
- safely and effectively operate and use plant, tools and equipment
- communicate and work effectively and safely with others.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure
- realistic tasks or simulated tasks covering the mandatory task requirements
- plant, tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and

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addressing hazards and emergencies
- relevant information, such as safety data sheets.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function, for example:

- CPCCCO3041A Place concrete
- CPCCCO3042A Finish concrete
- CPCCCO3043A Cure concrete.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety requirements must comply with state and territory legislation and regulations and project safety plan, and may

- assistance of others or the use of manual or mechanical lifting devices with handling activities where size, weight or other issues, such as disability, are a factor
- availability of SDS for substances to be used
- emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation

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include:

procedures

- hazard control
- hazardous materials and substances
- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - power cables, including overhead service trays, cables and conduits
  - signage and restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
  - working outdoors in warm climates
- use of firefighting equipment
- use of plant, tools and equipment
- workplace environmental requirements and safety.

Information may include:

- instructions issued by authorised organisational and external personnel
- memos
- regulatory and legislative requirements relating to using concreting plant, tools and equipment, including Australian standards
- safe work procedures relating to using concreting plant, tools and equipment
- SDS for substances to be used
- signage
- verbal, written and diagrammatic instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Relevant personnel may include:

- client
- colleague
- project manager
- supervisor.

Planning and

- inspecting work sites and assessing conditions and hazards

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preparation must include:

- determining work requirements and safety plans and procedures
- identifying and rectifying equipment defects.

Plant, tools and equipment may include:

- hand tools, including:
  - bolt cutters
  - crow bars
  - cutting knives
  - edging tools
  - floats
  - grinders
  - hammers
  - jointers
  - kneel boards
  - levelling equipment
  - long handled shovels
  - measuring tapes
  - nail bags
  - picks
  - pinch bars
  - pliers
  - rakes
  - sledge hammers
  - steel fixing reels
  - string lines
  - wire brushes
- screeds:
  - air or petrol driven
  - laser
  - magnesium
  - mechanical
  - rolling
- trowels:
  - frezno
  - magnesium trowels
  - ride-on trowelling machine with pans or blades
  - steel trowels
  - stick trowels
  - walk behind trowels
- power tools:
  - 240v power supplied electrically operated portable and

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	static power tools and leads
	• plant and equipment:
	  • compressors
	  • elevated work platforms (EWPs)
	  • scissor lifts
	  • vibrators.

Checked for serviceability includes ensuring:	• lubricants, hydraulic fluid and water are checked according to manufacturer recommendations • power tool guards, retaining bolts, couplings, gauges and controls are checked and maintained according to manufacturer recommendations • tools, leads and hoses are checked for tags, serviceability and safety, and faults are reported.
Quality requirements must include:	• internal organisational quality policy and standards • manufacturer specifications, where specified • relevant regulations and Australian standards • workplace operations and procedures.
Environmental requirements may include:	• clean-up management • dust and noise control • stormwater management • vibration management • waste management.
Maintenance must be appropriate to the tool, plant and equipment and include:	• cleaning • fault checking and rectification or referral to appropriate person • lubrication • sharpening.

Unit Sector(s)

Not applicable.

Custom Content Section

Not applicable.

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CPCCCO3026A Carry out repair and rectification of concrete

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to repair or rectify minor or major defects in concrete work to fix damaged areas.

The unit includes patching, refinishing, sealing and colouring concrete.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to repair and rectify concrete work, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Materials quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Carry out minor repairs.	2.1. Types of surface which may require repair are identified and repair work is categorised as major repairs or general repairs. 2.2. Colour variations are repaired by the application of a concrete staining agent. 2.3. Effects of ***dusting*** are repaired by the correct application of an appropriate surface hardener/dust inhibiting agent or removal of the weak top layer. 2.4. ***Damaged or blistered concrete*** is repaired either by grinding or topping. 2.5. Repair mortars and self-levelling floor compounds are applied according to manufacturer specification. 2.6. Sealers and coloured paints are applied to concrete surfaces in accordance with manufacturer specification.
3. Carry out rectification of cracks and other major defects.	3.1. Root cause of the defect is determined and rectified. 3.2. Concrete is prepared and flexible epoxy resins are applied to manufacturer specification. 3.3. Toppings are applied to concrete using correct materials and techniques. 3.4. Acid etching/cleaning is applied safely in

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ELEMENT	PERFORMANCE CRITERIA
	accordance with manufacturer requirements.
4. Clean up.	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 4.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- evaluating own actions and making judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- recognising procedures, following instructions, responding to change and contributing to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- teamwork skills to coordinate own work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities

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REQUIRED SKILLS AND KNOWLEDGE

- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- concrete repairing materials and techniques
- concrete structures
- control joints
- formwork and reinforcement
- general construction terminology
- job safety analysis (JSA) and safe work method statements
- levelling techniques
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- mortar mix composition and additives
- placing and finishing of concrete
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- types, characteristics, uses and limitations of plant, tools and equipment
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures including quality requirements • safely and effectively operate and use tools, plant and equipment • communicate and work effectively and safely with others • remove a section or whole defective area, cleaning and preparing the effected area and applying the necessary bonding • identify and apply the correct rectification method and top coat to a minimum of one square metre of affected area for three of the minor repairs and one major repair listed in the range statement.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements.

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EVIDENCE GUIDE

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances

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EVIDENCE GUIDE

assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to repairing concrete
- relevant Australian standards
- safe work procedures relating to repairing

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RANGE STATEMENT

	concrete • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

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RANGE STATEMENT

Tools and equipment include:	• brooms • concrete mixers • floats • grinders • hoses • polishers • power trowels • rollers • screeds • shovels • trowels • water blasters • wheelbarrows.
Quality requirements include:	• internal company quality policy and standards • manufacturer specifications where specified • relevant regulations, including Australian standards • workplace operations and procedures.

Materials:	• include concrete
	• may include:
	  • bonding agents
	  • curing compounds
	  • retardants.

Environmental requirements include:	• clean-up management • dust and noise • stormwater management • vibration • waste management.
Types of surface which may require repair include:	• beams • columns • concrete aprons • pathways • ramps • slabs • stairs • walls.
Repair work includes:	• dowelling • drilling • formwork

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RANGE STATEMENT

	• patching • replacing concrete • resurfacing • self-levelling compounds.
Major repairs include:	• cracks (wet, live and dormant) • non-bonding of new to old interfaces • non-compliant surfaces • subsidence.
General repairs involve:	• acid etching/cleaning • bonded toppings • levelling compounds • mortars • slippery surfaces • topping existing concrete • un-bonded toppings.
Dusting is a fault where:	• concrete is too soft as a result of poor curing • where the surface is breaking up.
Damaged or blistered concrete includes:	• blow holes • dusting • rain damage • spalling • stamped concrete defects • stencilled concrete defects • wavy or uneven surfaces.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCCO3035A Assess and specify concrete supply requirements

Modification History

New unit.
This version first released with CPC08 Construction and Property Services Training Package Version 9.

Unit Descriptor

This unit of competency specifies the outcomes required to evaluate concreting projects and determine the type and volume of concrete supply to be sourced in preparation for concreting work. It may include working with others and as a member of a team.

Application of the Unit

This unit of competency applies to concreting work in such areas as multi-storey car parks, public footpaths and residential or commercial construction projects.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to concreting work in different states and territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Assess concreting site and nature of work.	1.1	Site plans are reviewed and general size and nature of required concreting work are determined.
		1.2	Project specifications for concreting work are assessed and requirements for each area or feature are categorised according to differences in required ***concrete material*** properties.
		1.3	Delivery method for concrete supply at different locations and heights is determined and implications for required concrete material properties are assessed.
2	Assess properties of concrete supply required.	2.1	Strength grade designation (MPa) of concrete supply for different areas and features of concrete work is confirmed from project documentation and consultation with relevant personnel, as required.
		2.2	***Variable components of, and additives*** to, concrete mix for different areas and features of concrete work are confirmed from project documentation and consultation with relevant personnel, as required.
		2.3	***Concrete specifications*** to be met at on-site delivery are identified from project documentation and consultation with relevant personnel as required
		2.4	**Concrete specifications f**or each area and feature are specified for supplier according to project specifications and relevant standards.

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3	Determine total volumes and cost of supply of different types of concrete.	3.1	Dimensions of each area or feature of concreting work are interpreted from detailed site drawings and specifications.
		3.2	Volume of concrete required for each area or feature is calculated according to industry standards and workplace and project requirements.
		3.3	Total volumes of concrete supply for areas and features requiring identical properties are calculated.
		3.4	Total cost of required concrete is estimated according to workplace procedures.
4	Determine concrete delivery schedule.	4.1	Concrete delivery locations and site access and egress details are confirmed in consultation with relevant project personnel.
		4.2	Project timelines and sequencing of work are assessed and concrete delivery schedule calculated to ensure continuous and timely supply.
		4.3	Supplier specifications for volumes of different concrete mixes are developed.
		4.4	Delivery schedule is confirmed with relevant project personnel, adjusted as required, and finalised for inclusion with concrete specifications.
5	Finalise specifications for concrete supply.	5.1	Specifications are reviewed and checked for accuracy of concrete mix details for different areas and features.
		5.2	Individual area and feature dimensions and volume calculations are reviewed and checked for accuracy.
		5.3	Total volumes of concrete supply for areas and features requiring identical properties are reviewed and checked for accuracy.
		5.4	Team members and supervisor or manager are consulted for feedback on specifications, as required, according to workplace procedures.
		5.5	Supplier specifications are processed according to workplace procedures.

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5.6 Concrete order including delivery schedule is placed with supplier and order acceptance is confirmed.

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to develop and build understanding of concrete materials and supply volumes required for different types of concreting work
- numeracy skills to calculate areas and volumes of concreting projects
- oral communication skills to consult with team members and other relevant personnel regarding specifications for concreting work
- reading skills to interpret plans, specifications and concrete manufacturer information
- writing skills to prepare specifications for concrete supply

Required knowledge

- concrete additives and the effect on concrete curing, finishing and performance
- external factors affecting concrete curing, finishing and performance, and strategies for managing them, including:
  - delivery temperature
  - use of additives
- regulations and standards relating to concrete supply:
  - AS 1379 Specification and supply of concrete
  - AS 2758 Aggregate and rock for engineering purposes
  - AS 3582 Supplementary cementitious materials for use with Portland cement
  - AS 3600 Concrete structures
  - AS 3972 Portland and blended cements
- slump-test measurements required at delivery for different concrete mixes
- types, properties and limitations of different types of concrete

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by performing a range of tasks in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- assess concrete material requirements for three different types of concreting projects, including a multi-story car park; for each project, specify the types and volumes of concrete required to ensure job specifications and quality requirements are met
- prepare concrete delivery schedules
- prepare specifications for concrete supply according to workplace requirements.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure
- realistic tasks or simulated tasks covering the mandatory task requirements
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- safety data sheets (SDS).

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the following methods:

- direct observation of tasks in real or simulated work conditions

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- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. **Bold italicised** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Concrete material must include:

- normal class with strength grades in the range N20 to N50
- special class with strength grades in the range S20 to S100.

Variable components and additives may include:

- level of air entrainment
- maximum size of aggregate
- methods to ensure coolness of concrete, such as addition of liquid nitrogen
- proportion of cement.

Concrete specifications must include:

- required temperature of concrete
- slump-test measurement, which must be:
  - fit for purpose:
    - ramp or slope
    - slab
  - consistent with:
    - formwork
    - placement method

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- reinforcements.

Unit Sector(s)

Concreting

Custom Content Section

Not applicable.

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CPCCCO3036A Plan concrete work and brief team

Modification History

New unit.
This version first released with CPC08 Construction and Property Services Training Package Version 9.

Unit Descriptor

This unit of competency specifies the outcomes required to assess the size and scope of a concreting job, identify the resources required to complete the project on time and within budget, and communicate requirements to team members in preparation for concreting work to commence.

Application of the Unit

This unit of competency supports those who plan and prepare for concreting tasks. The person may be a nominated member of a team, or the team supervisor of concreters working on residential, commercial or civil construction sites.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to concreting work in different states and territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Assess concreting site and scope of work.	1.1	Site plans are reviewed and size and complexity of concreting tasks are evaluated.
		1.2	Site access and egress information and traffic management plan are assessed and additional provisions or changes negotiated as required.
		1.3	Provisions for site storage and amenities are assessed and additional provisions or changes are negotiated as required.
		1.4	Concurrent work of other construction teams is assessed and communication channels established or confirmed.
		1.5	***Work specifications*** are assessed and ***project stages*** identified and sequenced to meet project timelines for completion.
		1.6	***Work health and safety (WHS)*** and ***environmental requirements*** are confirmed and applied to planning.
2	Determine and source team.	2.1	Dimensions of each pour are confirmed, predicted weather conditions assessed, and basic person-hour requirements for concreting work are then calculated.
		2.2	***Specialised skill requirements*** for different project stages are determined and skills of available team members assessed to identify skill shortages.
		2.3	Additional team members with required skills are recruited within required timeframe to ensure prompt start to work.

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		2.4	Team members are allocated to tasks and human resource requirements for all project stages are checked and confirmed as complete.
3	Plan concrete pour.	3.1	***Material requirements*** are calculated, documented and sourced in preparation for work to commence on time and on budget.
		3.2	Type of concrete and curing time in predicted weather conditions are assessed for each pour and tasks are scheduled to meet project requirements.
		3.3	***Plant, tools and equipment*** required for each project stage are identified, documented and sourced in line with task schedule to ensure availability on site.
		3.4	Safe work method statements (SWMS) are developed or adapted for individual tasks according to workplace procedures and safety requirements.
		3.5	Potential risks, hazards and contingencies are assessed and management strategies developed.
4	Brief team members.	4.1	Site tour and induction for site safety and environmental requirements are arranged or conducted according to project and workplace requirements.
		4.2	Details of task allocations and scheduling are explained and discussed and team understanding of work requirements is confirmed.
		4.3	Concurrent work of other construction teams and communication channels are explained to team members and their understanding is confirmed.
		4.4	Provisions for dealing with risks, hazards and contingencies are explained and understanding of team members is confirmed.
		4.5	Team members are encouraged to clarify work requirements and suggest process improvements at all stages.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to develop and build understanding of:
  - types of concrete materials
  - properties and behaviour of concrete in different environmental conditions
- numeracy skills to calculate dimensions of pour and resource requirements
- oral communication skills to:
  - brief team members on work specifications and requirements
  - liaise with site personnel
- reading skills to interpret site plans and work specifications
- writing skills to develop or adapt SWMS

Required knowledge

- project management principles and strategies relevant to concrete work
- regulations and standards relevant to concrete work:
  - AS 3600 Concrete structures
  - environmental
  - WHS
- risks, hazards and contingencies relevant to concrete work and effective management strategies
- role and responsibilities of construction site personnel
- skills, plant, tools, equipment and materials required for concrete work
- terminology used on construction sites in relation to concreting and other trades

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by performing the mandated tasks in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- predict the number of resources and time required to complete three separate concrete projects, each measuring a minimum of 100 square metres, and identify skill requirements for each project
- identify and source appropriately skilled workers to complete the concreting work
- brief the concreting team on the work to be completed and quality requirements of the finished work.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- support materials appropriate to activity.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third

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parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. **Bold italicised** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work specifications may include:

- instructions issued by authorised organisational and external personnel
- regulatory and legislative requirements relating to concrete work, including Australian standards
- safety data sheets (SDS) for substances to be used
- verbal, written and diagrammatic instructions, including manufacturer specifications and instructions where specified
- work schedules, plans and specifications.

Project stages must include:

- work preparation:
  - fitting personal protective equipment (PPE)
  - selecting and checking tools and equipment
- site preparation:
  - excavation
  - formwork
  - subgrade
- delivery
- pouring
- compaction
- levelling
- finishing

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- curing
- site clean-up.

Work health and safety requirements must include:

- assistance of others or the use of manual or mechanical lifting devices with handling activities where size, weight or other issues, such as disability, are a factor
- emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures
- hazard control
- hazardous materials and substances
- PPE prescribed under legislation, regulations and workplace policies and practices relevant to concrete work
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - power cables, including overhead service trays, cables and conduits
  - signage and restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
  - working outdoors in warm climates
- use of plant, tools and equipment.

Environmental requirements must include:

- clean-up management
- dust and noise control
- stormwater management
- vibration management
- waste management.

Specialised skill requirements must include:

- decorative concreting
- cutting and coring
- concrete repairs.

Material requirements must include:

- concrete additives
- reinforcements.

Plant, tools and equipment must include combinations of the

- hand tools, including:
  - bolt cutters
  - crow bars

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following relevant to the tasks:

- cutting knives
- edging tools
- floats
- grinders
- hammers
- jointers
- kneel boards
- levelling equipment
- long handled shovels
- marking tools
- measuring tapes
- nail bags
- picks
- pinch bars
- pliers
- rakes
- sledge hammers
- steel fixing reels
- string lines
- wire brushes
- trowels:
  - frezno
  - magnesium trowels
  - ride-on trowelling machine with pans or blades
  - stick trowels
  - walk behind trowels
- power tools
- plant and equipment:
  - compressors
  - material shifting equipment
  - vibrators.

Unit Sector(s)

Concreting

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Custom Content Section

Not applicable.

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CPCCCO3041A Place concrete

Modification History

This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

- Changes to descriptor, elements and performance criteria, required skills and knowledge, critical aspects for assessment, and methods of assessment
- Range of other minor editorial changes

Not equivalent to CPCCCO3021A Place concrete.

Unit Descriptor

This unit of competency specifies the outcomes required to place concrete into prepared formwork or foundations to establish a strong base for further building work.
The unit includes calculating the volume of concrete required for the concrete pour, moving concrete from truck to pour location, and placing and screeding concrete.

Application of the Unit

This unit of competency supports the role of concreters working on residential, commercial or civil construction sites.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to concreting work in different states and territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions, ***work health and safety (WHS) requirements*** and other ***information*** relevant to the work are identified, confirmed and applied for ***planning and preparation*** purposes.
		1.2	***Plant, tools and equipment*** consistent with job requirements are selected and checked for serviceability, and faults are rectified and reported before work begins.
		1.3	Material quantity requirements, including the volume of concrete required, are identified and calculated according to plans, specifications and ***quality requirements***.
		1.4	Materials appropriate to the work application are obtained, prepared, safely handled and located ready for use.
		1.5	Time required for concrete pour is estimated based on size of area to be concreted, volume of concrete required, and level of complexity of concrete pour.
		1.6	***Environmental requirements*** are identified for the project according to environmental plans and regulatory requirements.
2	Define and prepare location for concrete placement.	2.1	***Location*** of concrete placement is determined from plans and specifications.
		2.2	Implications for concrete placement near existing structures are discussed with ***relevant personnel*** and appropriate processes are implemented to ensure

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			separation or connection.
		2.3	Location for placement is checked to be free of debris and waste.
		2.4	Safe working area is maintained around pour location using barriers and signage consistent with WHS regulations.
		2.5	Plant, tools and equipment are obtained and checked to suit planned placement.
3	Receive and dispatch concrete.	3.1	Delivery advice is checked for accuracy against ordered material.
		3.2	Access to the site is cleared.
		3.3	***Concrete delivery*** vehicle is directed to location of discharge.
		3.4	Concrete is discharged via chute into ***appropriate receptacle***.
4	Place concrete.	4.1	***Concrete is placed*** in horizontal layers into location according to indicated ***levels***.
		4.2	Height of vertical drop of concrete is minimised to ***avoid segregation of concrete*** materials.
		4.3	Poured concrete is consolidated during process using approved compaction or vibration method.
		4.4	Measurements and calculations are conducted throughout the pour to ensure sufficient concrete is delivered to fill the required area and orders are placed for shortfall as required.
		4.5	***Finished*** levels are checked against datum using appropriate levelling device.
		4.6	Concrete is ***screeded*** to correct levels and grades using appropriate straight edged tool or formwork mounted screed.

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5	Clean up.	5.1	Work area is cleared and materials disposed of, reused or recycled according to regulations, codes of practice and job specification.
		5.2	Plant, tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to:
  - evaluate own actions and make judgments about performance and necessary improvements
  - respond to change, such as differences in work site, and environmental and quality requirements
- numeracy skills to:
  - estimate time required to place concrete
  - calculate and confirm correct quantities of materials and volume of concrete required for work tasks at various times throughout the concrete pour
- oral communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - report work site hazards to appropriate personnel, including faults in tools, equipment or materials
  - use language and concepts appropriate to cultural differences
- reading skills to:
  - interpret documentation, including drawings and specifications
  - interpret manufacturer instructions for safely handling tools, equipment and materials
  - understand written instructions, procedures and signage
- writing skills to complete pre-operational checklists and simple equipment fault forms

Required knowledge

- concreting placement techniques:
  - cold joints and how to manage them effectively
  - compaction techniques
  - concrete reinforcement techniques
  - levelling techniques
  - placing concrete level and multi-level areas
- processes for calculating material requirements at various times throughout the concrete pour
- processes for material storage and environmentally friendly waste management
- properties of concrete, including the importance of maintaining the slump specified in the plans and specifications of the job in order to minimise waste, delay and faults in placing

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concrete
- quality requirements relating to placing concrete
- types and applications of concrete materials
- types, characteristics, uses and limitations of plant, tools and equipment relevant to placing concrete
- types, location and use of relevant safety resources and information:
  - job safety analyses (JSA) and safe work method statements (SWMS)
  - safety data sheets (SDS)
  - signage and barricades

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by performing a range of tasks in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to place concrete at five different placement sites, each measuring at least 100 square metres with a minimum of three sites requiring consideration for planned load bearing walls or columns, set down or wet areas in the slab, and multiple levels and temporary formwork.

The evidence provided should demonstrate the ability to:

- calculate time required for concrete pour
- estimate required volume of concrete prior to the concrete pour; and conduct relevant checks and calculations near the end of concrete pour and adjust volume of concrete as necessary
- place, screed to level, and compact concrete in a safe and effective way, using appropriate combinations of listed tools and equipment and in the timeframe provided
- locate, interpret and apply relevant information, standards and specifications relating to placing concrete
- comply with site safety plans and procedures
- comply with organisational policies and procedures relating to placing concrete while ensuring the required level of quality
- safely and effectively operate and use plant, tools and equipment required to place concrete
- communicate and work effectively and safely with others.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure

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- realistic tasks or simulated tasks covering the mandatory task requirements
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to placing concrete
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- safety data sheets.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function for example:

- CPCCCO2022A Use and maintain concreting plant, tools and equipment.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety

- assistance of others or the use of manual or mechanical lifting

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requirements must comply with state and territory legislation and regulations and project safety plan, and may include:

devices with handling activities where size, weight or other issues, such as disability, are a factor
- emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures
- hazard control
- hazardous materials and substances
- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - power cables, including overhead service trays, cables and conduits
  - signage and restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
  - working outdoors in warm climates
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Information may include:

- instructions issued by authorised organisational and external personnel
- memos
- regulatory and legislative requirements relating to placing concrete, including Australian standards
- safe work procedures relating to placing concrete
- safety data sheets
- signage
- verbal, written and diagrammatic instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Planning and preparation must include:

- assessing conditions and hazards
- calculating time required to complete task
- identifying and rectifying equipment defects

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- inspecting work sites.

Plant, tools and equipment:

- must include:
  - chutes
  - measuring tapes and rules
  - screed boards
  - shovels
  - trowels
- may include:
  - brooms
  - compressors
  - concrete placing booms
  - kibbles
  - line pumps
  - mechanised dumpers
  - rakes
  - stipple devices
  - trowelling machines
  - vibrators
  - wheelbarrows.

Quality requirements must include:

- internal organisational quality policy and standards
- manufacturer specifications where specified
- relevant regulations and Australian standards
- workplace operations and procedures.

Environmental requirements may include:

- clean-up management
- dust and noise control
- stormwater management
- vibration management
- waste management.

Location must include:

- single slab
- multi-level slab
- set down and wet areas
- temporary formwork.

Relevant personnel may include:

- architect
- client
- site manager or supervisor
- stonemason.

Concrete delivery may include:

- crane and kibble
- pre-mix truck
- wheelbarrow.

Appropriate receptacle

- hopper

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may include:	• kibble • pump • wheelbarrow.
Placing of concrete may include:	• kibble • pumping equipment • shovelling • tremmies • truck-placed • vibrating • wheelbarrows.
Levels are indicated by:	• level pegs • lines • markers.
Methods to ***avoid segregation of concrete*** may include:	• using a tremmie, minimise the height of a vertical drop (no greater than 2 metres high for 20MPA at 80 slump) • using pumps with a flexible hose.
Finishing techniques may include:	• broom finished • brushed • mechanical trowelling • steel trowelling • wood float.

Screeding:	• must include a hand screed
	• may include:
	  • a mechanical vibrating screed
	  • magic screeds.

Unit Sector(s)

Concreting

Custom Content Section

Not applicable.

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CPCCCO3042A Finish concrete

Modification History

This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

- Changes to elements and performance criteria, range statement, critical aspects for assessment, and methods of assessment
- Range of other minor editorial changes

Not equivalent to CPCCCO3022A Finish concrete

Unit Descriptor

This unit of competency specifies the outcomes required to finish concrete surfaces that have been placed and screeded in line with specified finish requirements.
The unit includes both manual and mechanical finishing techniques. It may also include working with others and as a member of a team.

Application of the Unit

This unit of competency supports the attainment of the understanding and skills to finish concrete on commercial, residential and civil construction sites.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to concreting work in different states and territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions, ***work health and safety (WHS) requirements*** and other ***information*** relevant to the work are identified, confirmed and applied for ***planning and preparation*** purposes.
		1.2	Plant, ***tools and equipment*** consistent with job requirements are selected and checked for serviceability, and faults are rectified and reported before work begins.
		1.3	Material quantity requirements are identified and calculated according to plans, specifications and ***quality requirements***.
		1.4	Materials appropriate to the work application are obtained, prepared, safely handled and located ready for use.
		1.5	***Environmental requirements*** are identified for the project according to environmental plans and regulatory requirements.
2	Apply concrete finishing techniques.	2.1	Bull float is applied immediately after initial screeding while concrete is still plastic, to assist in maintaining a level surface consistent with drawings and specifications and to remove screeding lines and inaccuracies.
		2.2	Surface of concrete is assessed during the curing process and level surface is maintained to allow manual and mechanical trowelling to be applied.
		2.3	Concrete is observed and left untouched until bleed water has come to the surface and evaporated.

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		2.4	Strength of setting concrete is assessed using a basic thumb test to ensure weight of mechanical trowel and operator can be accommodated.
		2.5	Mechanical trowelling is applied and reapplied in multiple overlapping lines, to consolidate and densify the setting concrete surface.
		2.6	Control joints are installed, ***edges finished*** and concrete trowelled to specifications.
		2.7	Concrete is ***finished*** according to job specifications.
3	Clean up.	3.1	Work area is cleared and materials disposed of, reused or recycled according to regulations, codes of practice and job specification.
		3.2	Plant, tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to:
  - evaluate own actions and make judgments about performance and necessary improvements
  - respond to change, such as differences in work site, and environmental and quality requirements
- numeracy skills to:
  - check levels of lubricants in tools
  - calculate and confirm correct quantities of materials for work tasks
- oral communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - report work site hazards to appropriate personnel, including faults in tools, equipment or materials
  - use language and concepts appropriate to cultural differences
- reading skills to:
  - interpret documentation, including drawings and specifications
  - interpret manufacturer instructions for safely handling tools and equipment
  - understand written instructions, procedures and signage
- writing skills to complete pre-operational checklists and simple equipment fault forms

Required knowledge

- concreting levelling and finishing techniques
- processes for calculating material requirements
- processes for material storage and environmentally friendly waste management
- properties of concrete to be able to correctly identify when finishing techniques should be applied to minimise waste, delay and faults in finishing concrete
- quality requirements and techniques that will result in the required concrete finish
- types, characteristics, uses and limitations of plant, tools and equipment relating to finishing concrete
- types, location and use of relevant safety resources and information:
  - job safety analyses (JSA) and safe work method statements (SWMS)
  - safety data sheets (SDS)
  - signage and barricades

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by undertaking a range of tasks in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to finish five different concrete surfaces, each measuring at least 100 square metres, according to job specifications.

The evidence provided should demonstrate the ability to:

- identify the appropriate time to apply finishing concrete techniques to ensure minimal delay and waste and that finished concrete meets job specifications
- correctly use relevant hand and power tools
- locate, interpret and apply relevant information, standards and specifications relating to finishing concrete
- comply with site safety plans and procedures
- comply with organisational policies and procedures relating to finishing concrete while maintaining quality requirements outlined in job specifications
- safely and effectively operate and use plant, tools and equipment required to finish concrete
- communicate and work effectively and safely with others.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices

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- support materials appropriate to finishing concrete
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- safety data sheets.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function for example:

- CPCCCO2022A Use and maintain concreting plant, tools and equipment.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety requirements must comply with state and territory legislation and regulations and project

- assistance of others or the use of manual or mechanical lifting devices with handling activities where size, weight or other issues, such as disability, are a factor
- availability of SDS for substances to be used
- emergency procedures, including extinguishing fires,

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safety plan, and may include:

organisational first aid requirements, and evacuation procedures
- hazard control
- hazardous materials and substances
- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - power cables, including overhead service trays, cables and conduits
  - signage and restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
  - working outdoors in warm climates
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Information may include:

- instructions issued by authorised organisational and external personnel
- memos
- regulatory and legislative requirements relating to finishing concrete, including Australian standards
- safe work procedures relating to finishing concrete
- safety data sheets for substances to be used
- signage
- verbal, written and diagrammatic instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Planning and preparation must include:

- assessing conditions and hazards
- calculating time required to complete task
- determining work requirements and safety plans and procedures
- identifying and rectifying equipment defects
- inspecting the work site.

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Tools and equipment:

- must include:
  - bull floats
  - power, hand or wooden floats
  - magnesium trowels
  - power trowels
  - steel trowels
- may include:
  - brooms
  - channel trowels
  - edging tools
  - hoses
  - step readers
  - stipple plates.

Quality requirements must include:

- internal organisational quality policy and standards
- manufacturer specifications where specified
- regulations and Australian standards relating to finishing concrete
- workplace operations and procedures.

Environmental requirements may include:

- clean-up management
- dust and noise control
- stormwater management
- vibration management
- waste management.

Edge finishing types must include:

- fine
- rounded
- straight edge.

Finished may include:

- broom finished
- brushed
- bull floated
- hand floated (wooden, magnesium or composition)
- slip resistant
- sprayed and brushed to expose aggregate
- steel trowelled
- use of a mechanical trowelling machine
- wood floated.

Unit Sector(s)

Concreting

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Custom Content Section

Not applicable.

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CPCCCO3043A Cure concrete

Modification History

This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

- Changes to descriptor, elements and performance criteria, range statement, critical aspects for assessment, and methods of assessment
- Range of other minor editorial changes

Not equivalent to CPCCCO3023A Cure concrete

Unit Descriptor

This unit of competency specifies the outcomes required to carry out the initial curing process to poured concrete in order to control moisture evaporation from finished concrete.
The unit includes using curing agents and curing techniques according to engineering specifications. It may also include working with others and as a member of a team.

Application of the Unit

This unit of competency supports the role of concreters working on residential, commercial or civil construction sites.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to concreting work in different states and territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions, ***work health and safety (WHS) requirements*** and other ***information*** relevant to the work are identified, confirmed and applied to ***planning and preparation***.
		1.2	Plant, ***tools and equipment*** consistent with the requirements of the job are selected and checked for serviceability, and faults are rectified and reported before work begins.
		1.3	Material quantity requirements are identified and calculated according to plans, specifications and ***quality requirements***.
		1.4	***Materials*** appropriate to the work application are obtained, prepared, safely handled and located ready for use.
		1.5	***Environmental requirements*** are identified for the project according to environmental plans and regulatory requirements.
2	Apply curing technique to concrete.	2.1	Preventive barriers are installed and maintained to prevent curing agents from affecting surrounding environment.
		2.2	***Curing compound*** and ***curing method*** are applied and maintained on concrete surface to project specifications.
		2.3	***Concrete is protected*** during curing process.

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3	Clean up.	3.1	Work area is cleared and materials disposed of, reused or recycled according to regulations, codes of practice and job specification.
		3.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to:
  - evaluate own actions and make judgments about performance and necessary improvements
  - respond to change, such as differences in work site, and environmental and quality requirements
- numeracy skills to calculate and confirm correct quantities of materials for work tasks
- oral communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - report work site hazards to appropriate personnel, including faults in tools, equipment or materials
  - use language and concepts appropriate to cultural differences
- reading skills to:
  - interpret documentation, including drawings and specifications
  - interpret manufacturer instructions for safely handling tools, equipment and materials
  - understand written instructions, procedures and signage
- writing skills to complete equipment fault forms

Required knowledge

- concrete curing techniques, including curing duration and effect on ultimate strength
- processes for material storage and environmentally friendly waste management
- processes for calculating material requirements
- properties of concrete to be able to minimise waste, delay and faults in curing concrete
- quality requirements relevant to curing concrete
- types and applications of concrete materials used in the curing process
- types, characteristics, uses and limitations of plant, tools and equipment relevant to curing concrete
- types, location and use of relevant safety resources and information:
  - job safety analyses (JSA) and safe work method statements (SWMS)
  - safety data sheets (SDS)
  - signage and barricades

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by undertaking a range of tasks in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to apply curing compound and methods to a minimum of five projects each measuring a minimum of 100 square metres of finished concrete according to project specifications, using at least two of the compounds and methods specified in the range statement.

The evidence provided should demonstrate the ability to:

- locate, interpret and apply information, standards and specifications relating to curing concrete
- comply with site safety plans and procedures
- comply with organisational policies and procedures relating to curing concrete while maintaining quality requirements outlined in job specifications
- safely and effectively operate and use plant, tools and equipment required to cure concrete
- communicate and work effectively and safely with others.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure
- realistic tasks or simulated tasks covering the mandatory task requirements
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to curing concrete
- workplace instructions relating to safe work practices and addressing hazards and emergencies

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- safety data sheets.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function for example:

- CPCCCO2022A Use and maintain concreting plant, tools and equipment.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety requirements must comply with according to state and territory legislation and regulations and project safety plan, and may include:

- assistance of others or the use of manual or mechanical lifting devices with handling activities where size, weight or other issues, such as disability, are a factor
- emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures
- hazard control
- hazardous materials and substances

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- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - power cables, including overhead service trays, cables and conduits
  - signage and restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
  - working outdoors in warm climates
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Information may include:

- instructions issued by authorised organisational and external personnel
- memos
- regulatory and legislative requirements relating to curing concrete, including relevant Australian standards
- safe work procedures relating to curing concrete
- safety data sheets
- signage
- verbal, written and diagrammatic instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Planning and preparation must include:

- assessing conditions and hazards
- calculating time required to complete task
- determining work requirements, safety plans and procedures
- identifying and rectifying equipment defects
- inspecting the work site.

Tools and equipment may include:

- hoses and sprinklers
- rollers
- spray applicators
- tarpaulins and covers.

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Quality requirements must include:	• internal organisational quality policy and standards • manufacturer specifications where specified • relevant regulations and Australian standards • workplace operations and procedures.
Materials may include:	• curing compounds • evaporation retardants • objects to hold plastic film in place • plastic film • steam • water.
Environmental requirements may include:	• clean-up management • dust and noise control • stormwater management • vibration management • waste management.
Curing compounds may include:	• chlorinated compounds • hydrocarbon compounds • polyvinyl alcohol (PVA) compounds • silicate compounds • solvent-based acrylic compounds • water • water-based acrylic compounds • wax-based compounds.
Curing methods may include:	• curing compounds • fogging • hessian overlays • hosing • impervious plastic membranes • misting • ponding • sprinklers • steam.
Protecting concrete must include:	• isolating and/or barricading the area • using plastic membrane where required.

Unit Sector(s)

Concreting

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Custom Content Section

Not applicable.

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CPCCCO3044A Carry out decorative finishes to concrete

Modification History

This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

- Changes to elements and performance criteria, required skills and knowledge, range statement, critical aspects for assessment, and methods of assessment
- Range of other minor editorial changes

Not equivalent to CPCCCO3024A Carry out decorative finishes to concrete

Unit Descriptor

This unit of competency specifies the outcomes required to apply decorative finishes to concrete surfaces. The finish includes the use of stamps, stencils, colours, exposed aggregate and textured finishes. It may include working with others and as a member of a team.

Application of the Unit

This unit of competency supports the attainment of the understanding and skills to provide a distinct featured face finish for driveways, patios, paths or other areas requiring a decorative finish.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to concreting work in different states and territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions, ***work health and safety (WHS) requirements*** and other ***information*** relevant to the work are identified, confirmed and applied for ***planning and preparation*** purposes.
		1.2	Plant, ***tools and equipment*** consistent with job requirements are selected and checked for serviceability, and faults are rectified and reported before work begins.
		1.3	Material quantity requirements are identified and calculated according to plans, specifications and ***quality requirements***.
		1.4	***Materials*** appropriate to the work application are obtained, prepared, safely handled and located ready for use.
		1.5	***Environmental requirements*** are identified for the project according to environmental plans and regulatory requirements.
2	Carry out stencil finishes with dry topping on wet concrete.	2.1	***Stencil finish*** is prepared so that any lapping maintains alignment and bond.
		2.2	Stencil is laid on to screeded surface to specifications ensuring alignment, bond and flat.
		2.3	Dry topping mix of colour, stone dust and cement is prepared and applied to specifications.
		2.4	Surface is finished with wood or magnesium float or steel trowel to a consistent texture according to

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			specifications.
		2.5	Stencil is lifted according to setting time in manufacturer recommendations.
		2.6	***Control joints*** are inserted to specifications during placement and/or cut into applied finish after setting.
3	Carry out stencil finishes with wet topping mix on dry concrete.	3.1	Existing concrete surface is cleaned of loose particles and debris.
		3.2	***Stencil finish*** is prepared so that any lapping maintains alignment and bond.
		3.3	Stencil is laid carefully on to dry surface according to specifications ensuring alignment, bond and flat.
		3.4	Powdered mix is mixed consistently according to manufacturer specifications, loaded into hopper gun while wet, and sprayed under pressure on to dry stencil surface.
		3.5	Stencil is lifted according to setting time in manufacturer recommendations.
4	Carry out stamp finishes.	4.1	Method of applying pattern is determined according to designed finish and specifications.
		4.2	***Stamped finish*** pattern equipment is checked for cleanliness and serviceability.
		4.3	Design layout is planned and initial starting point determined to specifications and design.
		4.4	Base colour and topping dust are prepared and applied to wet concrete according to specifications.
		4.5	Colours are applied as specified at random locations to create desired effect.
		4.6	***Release agent*** is prepared and applied to specifications.
		4.7	Stamp is used to create designed pattern and surface effect according to specifications.
		4.8	Control joints are inserted during placement and/or cut into applied finish after setting, according to

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			specifications.
		4.9	Concrete is cleaned of release agent and other debris and an appropriate sealant is applied according to job specifications.
5	Carry out exposed aggregate finishes.	5.1	Selected aggregates are incorporated into concrete mix to specifications.
		5.2	Concrete is laid to ensure exposed stone is uniform.
		5.3	Surface matrix is removed to expose aggregate.
		5.4	Chemical retardant is applied to surface to allow ease of matrix removal and exposure of aggregate.
		5.5	***Exposed aggregate*** is left clean and free to designed effect and specifications.
		5.6	Control joints are inserted during placement and/or cut into applied finish after setting, according to specifications.
		5.7	Sealant is applied to surface according to manufacturer specifications.
6	Carry out textured finishes.	6.1	Method of applying ***texture*** is determined according to designed finish and specifications.
		6.2	Topping dust is prepared and applied according to specifications.
		6.3	Base colour is floated into surface according to specifications.
		6.4	Colours are randomly applied, where specified, on to surface to create decorative type colourings.
		6.5	Finish is applied with trowel or other tools to create designed pattern and surface effect according to specifications.
		6.6	Control joints are inserted during placement and/or cut into applied finish after setting, according to specifications.

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7	Clean up.	7.1	Work area is cleared and materials disposed of, reused or recycled according to regulations, codes of practice and job specification.
		7.2	Plant, tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to:
  - evaluate own actions and make judgments about performance and necessary improvements
  - respond to change, such as differences in work site, and environmental and quality requirements
- numeracy skills to calculate and confirm correct quantities of materials for work tasks
- oral communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - report work site hazards to appropriate personnel, including faults in tools, equipment or materials
  - use language and concepts appropriate to cultural differences
- reading skills to:
  - interpret documentation, including drawings and specifications
  - understand written instructions, procedures and signage
  - interpret manufacturer instructions for safely handling tools and equipment
- writing skills to complete pre-operational checklists and equipment fault forms

Required knowledge

- application and methods of applying control joints
- principles and practices relating to carrying out decorative finishes to concrete:
  - concrete decorative finishing techniques
  - decorative concrete finishing materials
- types, location and use of relevant safety information:
  - job safety analyses (JSA) and safe work method statements (SWMS)
  - safety data sheets (SDS)
  - safety manuals and instructions for plant, tools and equipment
  - signage
  - environmental and work site safety plans
- processes for material storage and environmentally friendly waste management
- processes for calculating material requirements
- types, characteristics, uses and limitations of plant, tools and equipment used to provide decorative finishes to concrete
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by undertaking a range of tasks under observation in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- complete decorative finishes to a minimum of 20 square metres of concrete, using three out of the following five decorative techniques:
  - exposed aggregate finish
  - stamp finish
  - stencil finish with dry topping on wet concrete
  - stencil finish with wet topping mix on dry concrete
  - textured finish specified in range statement to job specifications
- locate, interpret and apply relevant information to achieve desired decorative finishes, including:
  - job specifications
  - manufacturer requirements relating to materials and use of tools
- comply with site safety plans and procedures
- comply with organisational policies and procedures relating to carrying out decorative finishes to concrete while maintaining quality requirements outlined in job specifications
- safely and effectively operate and use plant, tools and equipment required to carry out decorative concreting
- communicate and work effectively and safely with others.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

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Resource implications for assessment include:

- an induction procedure
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- safety data sheets.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety

- assistance of others or the use of manual or mechanical lifting

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requirements must comply with state and territory legislation and regulations and project safety plan, and may include:

devices with handling activities where size, weight or other issues, such as disability, are a factor
- emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures
- hazard control
- hazardous materials and substances
- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - power cables, including overhead service trays, cables and conduits
  - restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Information may include:

- instructions issued by authorised organisational and external personnel
- memos
- regulatory and legislative requirements relating to decorative concreting
- Australian standards relating to decorative concreting
- safe work procedures relating to decorative concreting
- safety data sheets
- signage
- verbal, written and diagrammatic instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Planning and preparation must include:

- assessing conditions and hazards
- determining work requirements and safety plans and policies
- identifying and rectifying equipment defects

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- inspecting work sites.

Tools and equipment:

- must include:
  - floats
  - hand tools
  - hoses
  - shovels
  - trowels
- may include:
  - brooms
  - power trowels
  - rollers
  - spray attachments
  - spray bottles
  - stamps
  - stipple devices
  - wheelbarrows.

Quality requirements must include:

- internal organisational quality policy and standards
- manufacturer specifications where specified
- relevant regulations and Australian standards
- workplace operations and procedures.

Materials may include:

- colourants
- mortar additives
- release agents
- river gravel aggregates
- sealants
- stencils.

Environmental requirements may include:

- clean-up management
- dust and noise control
- vibration management
- waste management.

Stencil finishes:

- can be applied with a decorative designed pre-prepared cut roll of material specified to customer requirements
- can be floated into the surface of the concrete
- involve the application of colour.

Control joints:

- are cut using:
  - hand held power saw
  - walk behind power saw
- are included in the concrete surface to control cracking according to engineer's drawings and specifications.

Form ***release agents*** must

- release agent powder.

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include:

Textured finishes may include:

- application of colour
- polished finish
- rough textured finish (non-slip) applied with a trowel
- stipple device.

Unit Sector(s)

Concreting

Custom Content Section

Not applicable.

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CPCCCO3046A Repair and rectify concrete

Modification History

This version first released CPC08 Construction, Plumbing and Services Training Package Version 9.

- Changes to unit title, performance criteria, required skills and knowledge, range statement, critical aspects for assessment, and methods of assessment
- Range of other minor editorial changes

Not equivalent to CPCCCO3026A Carry out repair and rectification of concrete

Unit Descriptor

This unit of competency specifies the outcomes required to repair and rectify minor and major defects in concrete work in order to fix damaged areas.
The unit includes patching, refinishing, sealing and colouring concrete. It may also include working with others and as a member of a team.

Application of the Unit

This unit of competency supports the role of concreters working on residential, commercial or civil construction sites to repair damaged concrete on surfaces that could include driveways, foundations and footpaths.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to concreting work in different states and territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions, ***work health and safety (WHS) requirements*** and other ***information*** relevant to the work are identified, confirmed and applied for ***planning and preparation*** purposes.
		1.2	Plant, ***tools and equipment*** consistent with job requirements are selected and checked for serviceability, and faults are rectified and reported before work begins.
		1.3	Material quantity requirements are identified and calculated according to plans, specifications and ***quality requirements***.
		1.4	***Materials*** appropriate to the work application are obtained, prepared, safely handled and located ready for use.
		1.5	***Environmental requirements*** are identified for the project according to environmental plans and regulatory requirements.
2	Carry out minor repairs.	2.1	***Types of surfaces that may require repair*** are identified and ***repair work*** is categorised as ***major repairs*** or ***minor repairs***.
		2.2	Colour variations are repaired by applying a concrete staining agent.
		2.3	Effects of dusting are repaired by applying an appropriate surface hardener/dust inhibiting agent or removing the weak top layer.

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		2.4	***Damaged or blistered concrete*** is repaired either by grinding or topping.
		2.5	Repair mortars and self-levelling floor compounds are applied according to manufacturer specifications.
		2.6	Sealers and coloured paints are applied to concrete surfaces according to manufacturer specifications.
3	Repair cracks and other major defects.	3.1	Root cause of defect is determined and rectified.
		3.2	Concrete is prepared and flexible epoxy resins are applied to manufacturer specification.
		3.3	Toppings are applied to concrete using correct materials and techniques.
		3.4	Acid etching and cleaning are applied safely according to manufacturer requirements.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to regulations, codes of practice and job specification.
		4.2	Plant, tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to:
  - evaluate own actions and make judgments about performance and necessary improvements
  - respond to change, such as differences in work site, and environmental and quality requirements
- numeracy skills to:
  - calculate and confirm correct quantities of materials for work tasks
  - estimate time required for repair and rectification of concrete
- oral communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - report work site hazards to appropriate personnel, including faults in tools, equipment or materials
  - use language and concepts appropriate to cultural differences
- reading skills to:
  - interpret documentation, including drawings and specifications
  - understand written instructions, procedures and signage
  - interpret manufacturer instructions for safely handling tools, equipment and materials
- writing skills to complete equipment fault forms

Required knowledge

- types, location and use of relevant safety resources and information:
  - job safety analyses (JSA) and safe work method statements (SWMS)
  - safety data sheets (SDS)
  - signage and barricades
- principles and processes for general concreting work:
  - materials and techniques for repairing concrete
  - preparation and placement of formwork and reinforcement
  - use of control joints
  - levelling techniques
  - mortar mix composition and additives
  - placing and finishing of concrete to ensure timely completion of job within quality

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requirements and specifications
- general construction terminology
- processes for material storage and environmentally friendly waste management
- processes for calculating material requirements
- quality requirements relevant to the repair and rectification of concrete
- types, characteristics, uses and limitations of concreting plant, tools and equipment:
  - safe operating procedures
  - operational, maintenance and basic diagnostic procedures
  - workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by undertaking a range of tasks in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- identify and apply the correct repair method and top coat to a minimum of one square metre of affected area for three minor repairs and one major repair listed in the range statement
- remove a section or whole defective area of concrete, cleaning and preparing the affected area and applying the necessary bonding
- locate, interpret and apply relevant information, standards and specifications relating to repairing and rectifying concrete
- comply with site safety plans and procedures
- comply with organisational policies and procedures relating to repairing and rectifying concrete while maintaining quality requirements
- safely and effectively operate and use plant, tools and equipment required to repair and rectify concrete
- communicate and work effectively and safely with others at each stage of the process to repair concrete.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure
- realistic tasks or simulated tasks covering the mandatory task requirements
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity

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- workplace instructions relating to safe work practices and addressing hazards and emergencies
- safety data sheets.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety (WHS)requirements must comply with state and territory legislation and regulations and project safety plan, and may include:

- assistance of others or the use of manual or mechanical lifting devices with handling activities where size, weight or other issues, such as disability, are a factor
- emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures
- hazard control
- hazardous materials and substances
- personal protective equipment (PPE) prescribed under

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legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - power cables, including overhead service trays, cables and conduits
  - restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
  - working outdoors in warm climates
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Information may include:

- instructions issued by authorised organisational and external personnel
- memos
- regulatory and legislative requirements relating to repairing concrete
- relevant Australian standards
- safe work procedures relating to repairing concrete
- safety data sheets
- signage
- verbal, written and diagrammatical instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Planning and preparation must include:

- assessing conditions and hazards
- determining work requirements and safety plans and procedures
- identifying equipment defects
- inspecting work sites.

Tools and equipment may include:

- brooms
- concrete mixers
- floats
- grinders
- hoses

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	• polishers • rollers • screeds • shovels • trowels, including power trowels • water blasters • wheelbarrows.
Quality requirements must include:	• internal organisational quality policy and standards • manufacturer specifications where specified • relevant regulations and Australian standards • workplace operations and procedures.

Materials:	• must include concrete
	• may include:
	  • bonding agents
	  • acrylic co-polymers
	  • resin based compounds
	  • silicate compounds
	  • curing compounds
	  • retardants.

Environmental requirements may include:	• clean-up management • dust and noise control • stormwater management • vibration management • waste management.
Types of surfaces that may require repair may include:	• beams • columns • concrete aprons • pathways • ramps • slabs • stairs • walls.
Repair work may include:	• dowelling • drilling • formwork • patching • replacing concrete • resurfacing • self-levelling compounds.
Major repairs may	• cracks (wet, live and dormant) • non-bonding of new to old interfaces

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include:

- non-compliant surfaces
- subsidence.

Minor repairs may involve:

- acid etching and cleaning
- bonded toppings
- levelling compounds
- mortars
- slippery surfaces
- topping existing concrete
- unbonded toppings.

Damaged or blistered concrete may include:

- blow holes
- dusting
- rain damage
- spalling
- stamped concrete defects
- stencilled concrete defects
- wavy or uneven surfaces.

Unit Sector(s)

Concreting

Custom Content Section

Not applicable.

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CPCCCO3047A Cut and core concrete

Modification History

This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

- Changes to performance criteria, required skills and knowledge, range statement, and methods of assessment
- Range of other minor editorial changes

Not equivalent to CPCCCO3027A Cut and core concrete.

Unit Descriptor

This unit of competency specifies the outcomes required to cut and core concrete, and plan and prepare the work.
The unit includes the use of sawing and drilling equipment. It may also include working with others and as a member of a team.

Application of the Unit

This unit applies to cutting and coring concrete to provide service holes, core samples and construction joints, and for joining new components.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to concreting work in different states and territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions, ***work health and safety (WHS) requirements*** and other ***information*** relevant to the work are identified, confirmed and applied for ***planning and preparation*** purposes.
		1.2	Plant, ***tools and equipment*** consistent with job requirements are selected and checked for serviceability, and faults are rectified and reported before work begins.
		1.3	Material quantity requirements are identified and calculated according to plans, specifications and ***quality requirements***.
		1.4	***Materials*** appropriate to the work application are obtained, prepared, safely handled and located ready for use.
		1.5	***Environmental requirements*** are identified for the project according to environmental plans and regulatory obligations.
2	Undertake cutting and coring activities.	2.1	***Cutting and coring*** requirements are identified.
		2.2	Equipment for ***sawing*** and drilling is selected according to the task.
		2.3	Sawn joint is cut to specifications and job requirements.
		2.4	Cored hole is drilled to specifications and job requirements.

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3	Clean up.	3.1	Work area is cleared and materials disposed of, reused or recycled according to regulations, codes of practice and job specification.
		3.2	Plant, tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to:
  - evaluate own actions and make judgments about performance and necessary improvements
  - respond to change, such as differences in work site, and environmental and quality requirements
- numeracy skills to:
  - check levels of lubricants in tools
  - calculate and confirm correct quantities of materials for work tasks
- oral communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - report work site hazards to appropriate personnel, including faults in tools, equipment or materials
  - use language and concepts appropriate to cultural differences
- reading skills to:
  - interpret documentation, including drawings and specifications
  - understand written instructions, procedures and signage
  - interpret manufacturer instructions for safely handling tools and equipment
- writing skills to complete pre-operational checklists and equipment fault forms

Required knowledge

- types, characteristics, uses and limitations of plant, tools and equipment used in cutting and coring concrete
- types, location and usage of relevant safety information:
  - job safety analyses (JSA) and safe work method statements (SWMS)
  - safety data sheets (SDS)
  - safety manuals and instructions for plant, tools and equipment
  - signage
  - environmental and work site safety plans
- principles of concreting:
  - substructure construction
  - concrete cutting and coring techniques

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  - purpose and placement of control joints
- general construction terminology
- processes for material storage and environmentally friendly waste management
- processes for calculating joint requirements
- quality requirements relating to cutting and coring concrete
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by undertaking a range of tasks in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- complete saw cutting of a construction joint to a minimum of 5 metres straight or to the set line, according to job specifications
- core a hole in a designated surface, clear through a minimum of 100mm in depth, according to job specifications
- locate, interpret and apply relevant information, standards and specifications relating to cutting and coring concrete
- comply with site safety plans and procedures
- comply with organisational policies and procedures relating to cutting and coring concrete while maintaining quality requirements as outlined in job specifications
- safely and effectively operate and use plant, tools and equipment required to cut and core concrete
- communicate and work effectively and safely with others.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure
- realistic tasks or simulated tasks covering the mandatory task requirements
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies

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- safety data sheets.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety requirements must comply with state and territory legislation and regulations and project safety plan, and may include:

- assistance of others or the use of manual or mechanical lifting devices with handling activities where size, weight or other issues, such as disability, are a factor
- emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures
- hazard control
- hazardous materials and substances
- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of

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operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - power cables, including overhead service trays, cables and conduits
  - restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Information may include:

- instructions issued by authorised organisational and external personnel
- memos
- regulatory and legislative requirements relating to coring concrete
- relevant Australian standards
- safe work procedures relating to coring concrete
- safety data sheets
- signage
- verbal, written and diagrammatic instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Planning and preparation must include:

- assessing conditions and hazards
- determining work requirements and safety plans and procedures
- identifying and rectifying equipment defects
- inspecting work sites.

Tools and equipment:

- must include:
  - concrete drilling equipment
  - concrete saws
  - coring equipment
  - diamond tip drill bits
- may include:
  - bolt cutters

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- hoses
- measuring tapes
- nips.

Quality requirements must include:

- internal organisational quality policy and standards
- manufacturer specifications where specified
- relevant regulations and Australian standards
- workplace operations and procedures.

Materials:

- must include water as a cooling agent
- may include other specialist cooling agents.

Environmental requirements may include:

- clean-up management
- dust and noise control
- stormwater management
- vibration management
- waste management.

Cutting and coring activities apply to:

- columns
- commercial buildings
- driveways
- foundations
- gutters
- hardstands
- kerbs
- pathways
- pits
- plinths
- residential buildings
- slabs
- walls.

Cutting concrete may include:

- anti-cracking joints
- articulation joints
- construction joints
- control joints
- expansion and contraction joints
- joining new concrete components
- structural joints.

Coring of concrete may include:

- providing for fixtures
- providing holes to accommodate services
- testing core samples.

Saw types may include:

- hand held
- walk behind.

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Unit Sector(s)

Concreting

Custom Content Section

Not applicable.

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CPCCCO3048A Construct tilt panels on site

Modification History

This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

- Changes to unit title, elements and performance criteria, required skills and knowledge, range statement, critical aspects for assessment, and methods of assessment
- Range of other minor editorial changes

Not equivalent to CPCCCO3028A Carry out tilt panel construction

Unit Descriptor

This unit of competency specifies the outcomes required to work in a team to set up, pour and place concrete tilt panels to form internal and external walls for building structures.
The unit includes on-site and prefabricated methods of panel construction. It may also include working with others and as a member of a team.

Application of the Unit

This unit of competency supports the role of concreters responsible for constructing concrete tilt panels on residential, commercial or civil construction sites. Tilt panels can be used to construct internal and external walls of structures.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to concreting work in different states and territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions, ***work health and safety (WHS) requirements*** and other ***information*** relevant to the work are identified, confirmed and applied for ***planning and preparation*** purposes.
		1.2	Plant, ***tools and equipment*** consistent with job requirements are selected and checked for serviceability, and faults are rectified and reported before work begins.
		1.3	Material quantity requirements are identified and calculated according to plans, specifications and ***quality requirements***.
		1.4	***Materials*** appropriate to the work application are obtained, prepared, safely handled and located ready for use.
		1.5	***Environmental requirements*** are identified for the project according to environmental plans and regulatory obligations.
2	Set out and construct temporary casting bed.	2.1	Appropriate area is selected to construct casting bed according to project requirements.
		2.2	Ground is prepared to a flat surface in preparation for the casting bed.
		2.3	Casting bed is placed and finished to project requirements.
		2.4	Casting bed is coated with bond breaker according to product specifications.

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3	Set out and prepare formwork for panel.	3.1	Location and size of ***tilt panel*** are set out to requirements of job drawings and specifications.
		3.2	Tilt panel edge ***formwork*** is prepared, placed and fixed plumb and aligned to specification.
		3.3	Bond breaker is applied to casting bed face or casting form face of previous panel to ensure ease of panel separation, according to manufacturer dose and quantity recommendations.
		3.4	Form release agent is applied to formwork according to specifications.
4	Place and tie reinforcement and cast-in fittings.	4.1	***Reinforcement***, accessories and ***cast-in fittings*** are checked for conformity with design and engineering specifications.
		4.2	Reinforcement, accessories and cast-in fittings are positioned exactly to engineer's drawings and engineering specifications.
		4.3	Reinforcement is tied and/or welded in correct placement according to engineer's drawings and specifications.
5	Place, finish and cure concrete.	5.1	Concrete is evenly ***placed*** and consolidated to specification using approved vibration method.
		5.2	Concrete surface is screeded and ***finished*** to specification ensuring cast-in fittings are clear.
		5.3	***Curing*** process is applied according to specification.
		5.4	Bond breaker is applied to casting bed face of previous panel to ensure ease of panel separation.
6	Clean up.	6.1	Clean-up procedures are undertaken on a daily basis according to work site policies and procedures.
		6.2	Edge formwork is stripped after the final panel is cast, ensuring no damage to panels.
		6.3	Work area is cleared and materials disposed of, reused

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or recycled according to regulations, codes of practice and job specification.

6.4 Plant, tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to:
  - evaluate own actions and make judgments about performance and necessary improvements
  - respond to change, such as differences in work site, and environmental and quality requirements
- numeracy skills to check levels of lubricants in tools
- oral communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - report work site hazards to appropriate personnel, including faults in tools, equipment or materials
  - use language and concepts appropriate to cultural differences
- reading skills to:
  - interpret documentation, including drawings and specifications
  - understand written instructions, procedures and signage
  - interpret manufacturer instructions for safely handling tools and equipment
- writing skills to complete equipment fault forms

Required knowledge

- concreting levelling techniques
- types, location and usage of relevant safety information:
  - job safety analyses (JSA) and safe work method statements (SWMS)
  - safety data sheets (SDS)
  - safety manuals and instructions for plant, tools and equipment
  - signage
  - environmental and work site safety plans
- formwork and reinforcing techniques and componentry
- general construction terminology
- processes for material storage and environmentally friendly waste management
- processes for placing, finishing and curing concrete
- processes for calculating material requirements
- techniques and processes for lifting inserts and ferrules positioning
- tensile strength of concrete panels

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- tilt panel construction materials and techniques
- types, characteristics, uses and limitations of plant, tools and equipment used in constructing tilt panels on site
- workplace and equipment safety requirements that apply to setting up, pouring and placing concrete tilt panels

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by undertaking a range of tasks in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- construct casting bed and formwork box for a minimum of six tilt panels measuring an average of 20 square metres each
- construct a minimum of six tilt panels, including a minimum of two of the following tilt panels:
  - blockouts
  - door and window penetrations
  - raking edges
  - water proofing and decorative rebates
- comply with engineering specifications, organisational policies and procedures, and quality requirements during construction of tilt panels
- locate, interpret and apply relevant information, standards and specifications relating to constructing tilt panels on site
- comply with site safety plans and procedures
- safely and effectively operate and use plant, tools and equipment required to construct tilt panels on site
- communicate and work effectively and safely with others during each stage of the tilt panel construction process.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure
- realistic tasks or simulated tasks covering the mandatory task requirements
- tools and equipment appropriate to applying safe work

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practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- safety data sheets.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety requirements must comply with state and territory legislation and regulations and project safety plan, and may include:

- assistance of others or the use of manual or mechanical lifting devices with handling activities where size, weight or other issues, such as disability, are a factor
- emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures
- hazard control

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- hazardous materials and substances
- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - power cables, including overhead service trays, cables and conduits
  - signage and restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
  - working outdoors in warm climates
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Information may include:

- instructions issued by authorised organisational and external personnel
- memos
- regulatory and legislative requirements relating to tilt panel construction
- relevant Australian standards
- safe work procedures relating to tilt panel construction
- safety data sheets
- signage
- verbal, written and diagrammatic instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Planning and preparation must include:

- assessing conditions and hazards
- determining work requirements and safety plans and procedures
- identifying and rectifying equipment defects
- inspecting work sites.

Tools and equipment:

- must include:
  - edging tools
  - formwork

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- hammers
- measuring tapes and rules
- power drills
- power leads
- screed boards
- shovels
- spanners
- spirit levels
- squares
- trowels, including power trowels
- vibrators
- may include:
  - air compressors and hoses
  - mechanical screeds
  - nail guns
  - power saws
  - rakes
  - saw stools
  - wheelbarrows.

Quality requirements must include:

- internal organisational quality policy and standards
- manufacturer specifications where specified
- relevant regulations and Australian standards
- workplace operations and procedures.

Materials may include:

- bond breaker and curing compound
- concrete
- ferrules
- form release agents
- lifters
- steel bars
- steel mesh.

Environmental requirements may include:

- clean-up management
- dust and noise control
- vibration management
- waste management.

Tilt panels may include:

- blockouts
- door and window penetrations
- raking edges
- water proofing and decorative rebates.

Formwork must include:

- bracing
- edge form timber

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Reinforcement components must include:	• plywood. • ligatures • mesh • reinforcement bars and rods.
Cast-in fittings may include:	• panel lifters • services and fixtures tied to the reinforcement • structural steel ferrules.
Placing methods for concrete may include:	• kibble • pumping equipment • shovelling • tremmies • truck-placed • vibrating • wheelbarrows.
Finishing techniques for concrete may include:	• broom finished • brushed • bull float • mechanical trowelling machine • steel trowel • wood float.
Curing may include:	• applied moisture • coating with a membrane • curing compound • flooding • plastic sheeting • steam.

Unit Sector(s)

Concreting

Custom Content Section

Not applicable.

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CPCCCO3049A Apply and finish sprayed concrete

Modification History

This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

- Changes to performance criteria, required skills and knowledge, range statement, and methods of assessment
- Range of other minor editorial changes

Not equivalent to CPCCCO3029A Apply and finish sprayed concrete

Unit Descriptor

This unit of competency specifies the outcomes required to apply and finish concrete using dry or wet spray to a variety of surfaces to develop retaining structures.
The unit includes pumping concrete at high velocity to a given structure. It may also include working with others and as a member of a team.

Application of the Unit

This unit of competency applies to applying and finishing sprayed concrete to a variety of surfaces where conventional concreting methods may not be applied.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to concreting work in different states and territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions, ***work health and safety (WHS) requirements*** and other ***information*** relevant to the work are identified, confirmed and applied for ***planning and preparation*** purposes.
		1.2	Plant, ***tools and equipment*** consistent with job requirements are selected and checked for serviceability, and faults are rectified and reported before work begins.
		1.3	Material quantity requirements are identified and calculated according to plans, specifications and ***quality requirements***.
		1.4	***Materials*** appropriate to the work application are obtained, prepared, safely handled and located ready for use.
		1.5	***Environmental requirements*** are identified for the project according to environmental plans and regulatory requirements.
2	Apply concrete using dry and wet spray process.	2.1	***Dry pumping and wet pumping*** equipment is prepared for delivery of concrete mix to spray nozzle.
		2.2	Constituent materials for spraying are selected and prepared.
		2.3	Reinforcement is checked to ensure it is away from structure where concrete is to be applied.
		2.4	Concrete is applied to the surface using ***wet spray method*** or ***dry spray method*** within specified tolerances.

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		2.5	***Sprayed concrete*** is shaped and finished to the form required according to specifications.
3	Clean up.	3.1	Work area is cleared and materials disposed of, reused or recycled according to regulations, codes of practice and job specification.
		3.2	Plant, tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to:
  - evaluate own actions and make judgments about performance and necessary improvements
  - respond to change, such as differences in work site, and environmental and quality requirements
- numeracy skills to:
  - check levels of lubricants in tools
  - calculate and confirm correct quantities of materials for work tasks
- oral communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - report work site hazards to appropriate personnel, including faults in tools, equipment or materials
  - use language and concepts appropriate to cultural differences
- reading skills to:
  - interpret documentation, including drawings and specifications
  - understand written instructions, procedures and signage
  - interpret manufacturer instructions for safely handling tools and equipment
- writing skills to complete equipment fault forms

Required knowledge

- types, characteristics, uses and limitations of plant, tools and equipment used when applying and finishing sprayed concrete
- types, location and usage of relevant safety information:
  - job safety analyses (JSA) and safe work method statements (SWMS)
  - safety data sheets (SDS)
  - safety manuals and instructions for plant, tools and equipment
  - signage
  - environmental and work site safety plans
- principles of concreting, including:
  - concrete placement
  - concrete spray finishing techniques
  - curing practices and durations
- general construction terminology
- processes for material storage and environmentally friendly waste management

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- processes for calculating material requirements
- quality requirements, including specified finishes

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by performing a range of tasks in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- apply and finish wet and dry spraying concreting methods to at least two projects for a minimum of 10 square metres each, to job specifications
- locate, interpret and apply relevant information, standards and specifications relating to applying and finishing sprayed concrete
- comply with site safety plans and procedures
- comply with organisational policies and procedures relating to applying and finishing sprayed concrete while maintaining quality requirements outlined in job specifications
- safely and effectively operate and use plant, tools and equipment required to apply and finish sprayed concrete
- communicate and work effectively and safely with others.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- safety data sheets.

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Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety requirements must comply with to state and territory legislation and regulations and project safety plan, and may include:

- assistance of others or the use of manual or mechanical lifting devices with handling activities where size, weight or other issues, such as disability, are a factor
- emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures
- hazard control
- hazardous materials and substances
- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - power cables, including overhead service trays, cables and

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conduits
- restricted access barriers
- surrounding structures
- traffic control
- trip hazards
- work site visitors and the public
- working at heights
- working in confined spaces
- working in proximity to others
- working outdoors in warm climates
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Information may include:
- instructions issued by authorised organisational and external personnel
- memos
- regulatory and legislative requirements relating to spray finished concreting
- relevant Australian standards
- safe work procedures relating to spray finished concreting
- safety data sheets
- signage
- verbal, written and diagrammatic instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Planning and preparation must include:
- assessing conditions and hazards
- determining work requirements and safety plans and procedures
- identifying and rectifying equipment defects
- inspecting work sites.

Tools and equipment may include:
- compressed air delivery systems
- normal concreting tools
- portable water supply
- pumps
- steel floats
- transport pipes
- wood floats.

Quality requirements must include:
- internal organisational quality policy and standards
- manufacturer specifications where specified
- relevant regulations and Australian standards

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- workplace operations and procedures.

Materials may include:

- additives
- aggregates
- cements
- curing compounds
- fibres or steel reinforcement
- pre-bagged materials
- ready mix materials to a specific design application
- site batching.

Environmental requirements may include:

- clean-up management
- dust and noise control
- stormwater management
- vibration management
- waste management.

Wet spray method may include:

- large scale projects
- vertical sections devoid of formwork shuttering.

Dry spray method may include:

- dense compact repairs
- intricate work
- overhead repairs.

Concrete surfaces where ***spray methods*** may be applied include:

- barrel vaulting
- caissons
- canal linings
- diaphragm walls
- drainage channels
- irrigation
- piled wall facings
- reservoirs
- shell roofs and domes
- silo structures
- swimming pools
- tunnel linings
- walls
- water towers.

Sprayed concrete may be installed to formwork or non-rigid formwork to maximise adhesion, such as:

- expanded metal reinforcement
- hessian
- other backgrounds.

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Unit Sector(s)

Concreting

Custom Content Section

Not applicable.

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CPCCCO3050A Carry out high performance concreting

Modification History

This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

- Changes to performance criteria, required skills and knowledge, range statement, and methods of assessment
- Range of other minor editorial changes

Not equivalent to CPCCCO3030A Carry out high performance concreting

Unit Descriptor

This unit of competency specifies the outcomes required to plan, prepare and place high performance concrete onto structures requiring high strength attributes and durability.
The unit includes the finish of high performance concrete. It may also include working with others and as a member of a team.

Application of the Unit

This unit of competency applies to a variety of structures, such as bridges, airport runways, dams, cooling towers, foundation supports for high rise facilities, roadways and tunnels.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to concreting work in different states and territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions, ***work health and safety (WHS) requirements*** and other ***information*** relevant to the work are identified, confirmed and applied for ***planning and preparation*** purposes.
		1.2	Plant, ***tools and equipment*** consistent with job requirements are selected and checked for serviceability, and faults are rectified and reported before work begins.
		1.3	Material quantity requirements are identified and calculated according to plans, specifications and ***quality requirements***.
		1.4	Materials appropriate to the work application are obtained, prepared, safely handled and located ready for use.
		1.5	***Environmental requirements*** are identified for the project according to environmental plans and regulatory requirements.
2	Place high performance concrete.	2.1	Concrete tests for each specified performance property are performed according to specifications and associated testing standards.
		2.2	Once transported, ***high performance concrete*** is discharged correctly into formwork, using correct mechanical or manual handling techniques and processes.
		2.3	High performance ***concrete is placed*** by technique nominated in specifications to ensure timely placement

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and to avoid material segregation.

2.4 High performance concrete is compacted/vibrated and ***screeded*** to the nominated criteria into designated formwork according to specifications and supporting drawings.

2.5 High performance concrete is ***finished*** to specified thickness and height.

2.6 High performance concrete curing regime is applied as per specifications to include a selection of curing methods, which are then documented.

2.7 Concrete is protected from damage and pollution during construction using a plastic membrane.

3 Clean up.

3.1 Work area is cleared and materials disposed of, reused or recycled according to regulations, codes of practice and job specification.

3.2 Plant, tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to:
  - evaluate own actions and make judgments about performance and necessary improvements
  - respond to change, such as differences in work site, and environmental and quality requirements
- numeracy skills to:
  - check levels of lubricants in tools
  - calculate and confirm correct quantities of materials for work tasks
- oral communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - report work site hazards to appropriate personnel, including faults in tools, equipment or materials
  - use language and concepts appropriate to cultural differences
- reading skills to:
  - interpret documentation, including drawings and specifications
  - understand written instructions, procedures and signage
  - interpret manufacturer instructions for safely handling tools and equipment
- writing skills to complete pre-operational checklists and equipment fault forms

Required knowledge

- general construction terminology
- processes for calculating material requirements
- properties, strength and performance of concrete:
  - placement, finishing and curing techniques
  - concrete testing techniques
  - high performance concrete materials and techniques
- quality requirements:
  - internal organisational quality policy and standards
  - manufacturer specifications where specified
  - relevant regulations and Australian standards
  - workplace operations and procedures

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  - substructure construction
- processes for material storage and environmentally friendly waste management
- types, characteristics, uses and limitations of plant, tools and equipment used in carrying out high performance concreting
- types, location and use of relevant safety information:
  - job safety analyses (JSA) and safe work method statements (SWMS)
  - safety data sheets (SDS)
  - safety manuals and instructions for plant, tools and equipment
  - signage
  - environmental and work site safety plans
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by undertaking a range of tasks in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- complete planning, preparation, placement, finishing and curing of 10 square metres of high performance concrete to engineer's specifications
- locate, interpret and apply relevant information, standards and specifications relating to carrying out high performance concreting
- comply with site safety plans and procedures
- comply with organisational policies and procedures relating to carrying out high performance concreting while maintaining quality requirements outlined in job specifications
- safely and effectively operate and use plant, tools and equipment required to carry out high performance concreting
- communicate and work effectively and safely with others.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure
- realistic tasks or simulated tasks covering the mandatory task requirements
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- research resources and industry-related systems information

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- safety data sheets.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety requirements must comply with state and territory legislation and regulations and project safety plan, and may include:

- assistance of others or the use of manual or mechanical lifting devices with handling activities where size, weight or other issues, such as disability, are a factor
- emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures
- hazard control
- hazardous materials and substances
- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of

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operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - power cables, including overhead service trays, cables and conduits
  - restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
  - working outdoors in warm climates
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Information may include:

- instructions issued by authorised organisational and external personnel
- memos
- regulatory and legislative requirements relating to carrying out high performance concreting, including relevant Australian standards
- safe work procedures relating to carrying out high performance concreting
- safety data sheets
- signage
- verbal, written and diagrammatical instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Planning and preparation must include:

- assessing conditions and hazards
- determining work requirements and safety plans and procedures
- identifying and rectifying equipment defects
- inspecting work sites.

Tools and equipment:

- must include:
  - bull floats
  - composite floats
  - immersion vibrators
  - magnesium floats

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- power floats
- rakes
- screed boards
- shovels
- steel trowels
- vibrating screeds

- may include:
  - bolt cutters
  - brooms
  - concrete kibbles
  - curing compounds applicators
  - edging tools
  - measuring tapes
  - nips
  - tarpaulins and covers
  - tremmies
  - wheelbarrows
  - wooden floats.

Quality requirements must include:

- internal organisational quality policy and standards
- manufacturer specifications where specified
- relevant regulations and Australian standards
- workplace operations and procedures.

Materials:

- must include high performance concrete
- may include:
  - curing compounds
  - a range of specialist additives.

Environmental requirements may include:

- clean-up management
- dust and noise control
- vibration management
- waste management.

High performance concrete includes the following applications:

- airport runways
- bridges
- columns
- cooling towers
- dams
- foundation supports for high rise facilities
- foundations
- gutters
- hardstands
- kerbs

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	• pathways • pits • plinths • roadways • slabs • stairs • tunnels • walls.
Concrete placing methods may include:	• kibble • pumping equipment • shovelling • tremmies • truck-placed • vibrating • wheelbarrows.

Screeding:	• must include a hand screed
	• may include:
	  • a mechanical vibrating screed
	  • magic screeds.

Finishing techniques may include:	• broom finished • brushed • bull float • mechanical trowelling machine • steel trowel • wood float.

Unit Sector(s)

Concreting

Custom Content Section

Not applicable.

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CPCCCO3051A Conduct off-form vertical concrete operations

Modification History

This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

- Changes to performance criteria, required skills and knowledge, range statement, and methods of assessment
- Range of other minor editorial changes

Not equivalent to CPCCCO3031A Conduct off-form vertical concrete operations

Unit Descriptor

This unit of competency specifies the outcomes required to prepare and apply concrete to a slip or jump formwork structure.
The unit covers sequencing, placing and compacting concrete in formwork. It may include working with others and as a member of a team.

Application of the Unit

This unit of competency supports the role of those working with concrete on residential, commercial or civil construction sites in the construction of multi-storey buildings.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to concreting work in different states and territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions, ***work health and safety (WHS) requirements*** and other ***information*** relevant to the work are identified, confirmed and applied for ***planning and preparation*** purposes.
		1.2	Plant, ***tools and equipment*** consistent with job requirements are selected and checked for serviceability, and faults are rectified and reported before work begins.
		1.3	Material quantity requirements are identified and calculated according to plans, specifications and ***quality requirements***.
		1.4	***Materials*** appropriate to the work application are obtained, prepared, safely handled and located ready for use.
		1.5	***Environmental requirements*** are identified and applied for the project according to environmental plans and regulatory obligations.
2	Set out and prepare slip or jump form location.	2.1	Location and size of pour are set out to requirements of job drawings and specifications.
		2.2	Equipment associated with the installation of ***slip or jump formwork concrete*** projects is prepared.
		2.3	Edge ***formwork*** is prepared, placed and fixed with plumb and alignment to specification requirements, and is set out.
		2.4	Form release agent is applied to slip or jump formwork

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			with appliance or machine to specifications.
3	Place and tie reinforcement and cast-in fittings.	3.1	***Reinforcement***, accessories and ***cast-in fittings*** are checked for conformity with design and specifications.
		3.2	Reinforcement and accessories are positioned to engineer's drawings and specifications.
		3.3	Reinforcement is tied and/or welded in correct placement according to engineer's drawings and specifications.
4	Place, finish and cure concrete.	4.1	***Sequencing*** of concrete placement is determined according to specifications.
		4.2	Once transported, concrete is evenly ***placed*** into formwork in layers and consolidated to specification, avoiding material segregation and using approved compaction method.
		4.3	Concrete surface is screeded and finished to specification ensuring cast-in fittings are clear.
		4.4	***Curing*** process is applied according to specification.
		4.5	Slip or jump formwork is progressed by riggers and placement cycle is continued, avoiding cold joint.
5	Clean up.	5.1	Work area is cleared and materials disposed of, reused or recycled according to regulations, codes of practice and job specification.
		5.2	Plant, tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to:
  - evaluate own actions and make judgments about performance and necessary improvements
  - respond to change, such as differences in work site, and environmental and quality requirements
- numeracy skills to:
  - check levels of lubricants in tools
  - calculate and confirm correct quantities of materials for work tasks
- oral communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - report work site hazards to appropriate personnel, including faults in tools, equipment or materials
  - use language and concepts appropriate to cultural differences
- reading skills to:
  - interpret documentation, including drawings and specifications
  - understand written instructions, procedures and signage
  - interpret manufacturer instructions for safely handling tools and equipment
- writing skills to complete pre-operational checklists and equipment fault forms

Required knowledge

- general construction terminology
- principles of concreting, including:
  - techniques for placing, finishing and curing concrete
  - levelling techniques
- principles of slip or jump formwork systems, including:
  - slip or jump formwork vertical concrete materials and techniques
  - slip or jump formwork and reinforcing componentry
- processes for calculating material requirements
- quality requirements relating to each stage of conducting off-form vertical concrete operations
- processes for material storage and environmentally friendly waste management
- sequencing and cold joints use requirements

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- types, characteristics, uses and limitations of plant, tools and equipment used in conducting off-form vertical operations
- types, location and usage of relevant safety information such as:
  - job safety analyses (JSA) and safe work method statements (SWMS)
  - safety data sheets (SDS)
  - safety manuals and instructions for plant, tools and equipment
  - signage
  - environmental and work site safety plans
- workplace and equipment safety requirements, including hazard reporting requirements and correct handling of equipment faults

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by undertaking a range of tasks in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- complete planning, preparation, reinforcement placement and installation of block out; install cast-in fittings; and sequence, place, finish and cure concrete, minimising cold joint and undertaking compaction of concrete for one slip or jump form to engineer's specifications
- locate, interpret and apply relevant information, standards and specifications relating to conducting off-form vertical concrete operations
- comply with site safety plans and procedures
- comply with organisational policies and procedures relating to conducting off-form vertical concrete operations while maintaining quality requirements outlined in job specifications
- safely and effectively operate and use plant, tools and equipment required to conduct off-form vertical concrete operations
- communicate and work effectively and safely with others during each stage of the work task.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure
- realistic tasks or simulated tasks covering the mandatory task requirements
- tools and equipment appropriate to applying safe work practices

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- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- research resources and industry-related systems information
- safety data sheets.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety requirements must comply with state and territory legislation and regulations and project safety plan, and may include:

- assistance of others or the use of manual or mechanical lifting devices with handling activities where size, weight or other issues, such as disability, are a factor
- emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures
- hazard control

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- hazardous materials and substances
- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - power cables, including overhead service trays, cables and conduits
  - restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Information may include:

- instructions issued by authorised organisational and external personnel
- memos
- regulatory and legislative requirements relating to off-form vertical concreting
- relevant Australian standards
- safe work procedures relating to off-form vertical concreting
- safety data sheets
- signage
- verbal, written and diagrammatical instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Planning and preparation must include:

- assessing conditions and hazards
- determining work requirements and safety plans and procedures
- identifying and rectifying equipment defects
- inspecting work sites.

Tools and equipment:

- must include:
  - hydraulic accessories
  - measuring tapes and rules
  - nips

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- shovels
- slip or jump formwork
- spanners
- steel fixing reels
- vibrators

- may include:
  - air compressors and hoses
  - hammers
  - nail guns
  - power drills
  - power leads
  - power saws
  - rakes
  - saw stools
  - scaffolding
  - screed boards
  - spirit levels
  - squares
  - wheelbarrows.

Quality requirements must include:

- internal organisational quality policy and standards
- manufacturer specifications where specified
- relevant regulations and Australian standards
- workplace operations and procedures.

Materials may include:

- cast-in fittings
- concrete
- foam
- release agents
- steel mesh.

Environmental requirements may include:

- clean-up management
- dust and noise control
- stormwater management
- vibration management
- waste management.

Slip or jump formwork concreting is conducted:

- in conjunction with other team members involved in the slip or jump form process, including concreters, carpenters, riggers, steel fixers and electricians.

Formwork may include:

- steel or timber slip or jump construction.

Reinforcement components may include:

- ligatures
- mesh
- reinforcement bars and rods.

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Sequencing must include:

- minimising cold joint
- timing and placement of concrete
- vibrating to specified compaction.

Placing methods for concrete may include:

- kibble
- pumping equipment
- shovelling
- tremmies
- truck-placed
- vibrating.

Curing must include:

- applied moisture
- coating with a membrane
- curing compounds
- flooding
- plastic sheeting
- steam.

Unit Sector(s)

Not applicable.

Custom Content Section

Not applicable.

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CPCCCO3052A Conduct concrete boom delivery operations

Modification History

This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

- Changes to performance criteria, required skills and knowledge, range statement, and methods of assessment
- Range of other minor editorial changes

Not equivalent to CPCCCO3032A Conduct concrete boom delivery operations

Unit Descriptor

This unit of competency specifies the outcomes required to conduct concrete boom delivery operations, using a vehicle-borne pumping system, in support of construction projects. It covers systems with a minimum of two boom stages.
The unit covers planning and preparing for work; conducting operational checks; the safe and effective operation of the vehicle and pumping system; the safe establishment, use and monitoring of the boom distribution system; and conducting operator maintenance and work finalisation activities.
The unit may include working with others and as a member of a team.

Application of the Unit

This unit of competency supports the role of those who deliver concrete placing booms to residential, commercial or civil construction sites.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to concreting work in different states and territories. Candidates are advised to consult with the relevant regulatory authorities.

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Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions, ***work health and safety (WHS) requirements*** and other ***information*** relevant to the work are identified, confirmed and applied for ***planning and preparation*** purposes.
		1.2	***Tools and equipment*** consistent with job requirements are selected and checked for serviceability, and faults are rectified and reported before work begins.
		1.3	Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
		1.4	***Environmental requirements*** are identified for the project according to environmental plans, local council requirements and regulatory obligations.

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2	Conduct boom delivery system pre-operational checks.	2.1	Pre-start, start-up, park and shut-down procedures, including emergency shut-down procedures, are carried out on the vehicle and pump according to manufacturer and/or site-specific requirements.
		2.2	Vehicle controls and ***functions*** are checked for serviceability and faults are rectified and reported in vehicle log book.
		2.3	Distribution ***system components*** are checked before use.
		2.4	Hoppers are cleaned and serviced prior to use.
3	Operate concrete boom delivery vehicle.	3.1	***Hazards associated with vehicle positioning and operations*** are identified and safe operating techniques are used to minimise risk.
		3.2	Engine power is managed to ensure efficiency of concrete pump vehicle platform movements and to minimise damage to engine and gears.
		3.3	Engine power is coordinated with gear selection ensuring smooth transition and operation within torque range.
		3.4	Truck is operated to work instructions according to company operating procedures.
		3.5	Road and traffic conditions are monitored, taking into account road standards, traffic flow, distance and load, and ensuring no injury to people or damage to property, equipment, loads and facilities.
		3.6	Truck is brought to a halt smoothly, using the engine retarder, gears and brakes, and minimising wear and tear on vehicle.
4	Deliver concrete.	4.1	***Hazards associated with positioning and operating boom*** delivery components are identified and analysed, and safe operating techniques are used to minimise risk.
		4.2	Boom delivery vehicle is positioned at site where it can best service the delivery task and provide access to concrete supply vehicles.

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		4.3	Delivery platform stabilisers are prepared, deployed and checked to manufacturer requirements for operation and safety.
		4.4	***Delivery system components*** are positioned securely and safely, according to manufacturer specifications, and checked prior to use.
		4.5	Pumping systems are test run and prepared for use according to equipment specifications.
		4.6	Supply of bulk ***concrete mix*** to the hopper is coordinated safely with supply vehicle operators.
		4.7	Boom delivery system is operated and its positioning is varied to maintain concrete delivery to the required destination.
		4.8	Boom delivery system is safely withdrawn at completion of delivery task.
5	Carry out operator maintenance.	5.1	Boom delivery vehicle is safely parked, prepared for ***maintenance*** and shut down as per manufacturer manual and organisational requirements.
		5.2	Inspection and fault finding on the vehicle, pump and boom system components are conducted according to manufacturer specifications, with outcomes recorded according to workplace procedures.
		5.3	Defective parts are removed and replaced safely and effectively according to manufacturer manual and organisational requirements.
		5.4	Regular programmed maintenance tasks are carried out according to manufacturer and organisational requirements.
6	Clean up.	6.1	Work area is cleared and materials disposed of, reused or recycled according to project environmental management plan.
		6.2	Vehicle, tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to:
  - evaluate own actions and make judgments about performance and necessary improvements
  - respond to change, such as differences in work site, and environmental and quality requirements
  - numeracy skills to check levels of lubricants in tools
- oral communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - report work site hazards to appropriate personnel, including faults in tools, equipment or materials
  - use language and concepts appropriate to cultural differences
- reading skills to:
  - interpret documentation, including drawings and specifications
  - understand written instructions, procedures and signage
  - interpret manufacturer instructions for safely handling tools and equipment
- writing skills to complete pre-operational checklists and equipment fault forms

Required knowledge

- boom and line establishment techniques
- characteristics, technical capabilities and limitations of concrete boom delivery vehicle systems:
  - operational, maintenance and basic diagnostic procedures
  - pumps and pumping system operations
  - safe operating techniques in all terrain
- construction activity sequences relating to bulk concreting operations
- general construction terminology
- quality requirements relating to concrete boom delivery operations
- requirements and methods for safe materials handling
- site and equipment safety requirements:
  - knowing when and how to activate emergency shut-down procedures
  - overhead safety requirements relating to boom operations
- site isolation and traffic control responsibilities and authorities

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- state or territory regulatory requirements relating to boom delivery system operations
- types, location and usage of relevant safety information:
  - job safety analyses (JSA) and safe work method statements (SWMS)
  - safety data sheets(SDS)
  - safety manuals and instructions for plant, tools and equipment
  - signage
  - environmental and work site safety plans

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by undertaking a range of tasks in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- conduct concrete boom delivery truck system operations over not less than three shifts at two different sites, which will include demonstration of:
  - positioning of the vehicle
  - preparation and positioning of the booms and lines
  - preparation of the pump and hopper
  - coordination of maintenance of hopper levels
  - delivery of concrete to required location on work site
  - variation of boom delivery system positioning to meet changing requirements
  - withdrawal of the boom delivery system
  - application of emergency procedures
  - authorised operator maintenance
- locate, interpret and apply relevant information, standards and specifications relating to concrete boom delivery operations
- comply with site safety plans and procedures
- comply with organisational policies and procedures, relating to concrete boom delivery operations, including quality requirements
- communicate and work effectively and safely with others during each stage of the concrete boom delivery operation.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment include:

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- an induction procedure
- realistic tasks or simulated tasks covering the mandatory task requirements
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- safety data sheets.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety requirements must comply with state and territory legislation and

- assistance of others or the use of manual or mechanical lifting devices with handling activities where size, weight or other issues, such as disability, are a factor
- emergency procedures, including extinguishing fires,

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regulations and project safety plan, and may include:

organisational first aid requirements, and evacuation procedures
- hazard control
- hazardous materials and substances
- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - power cables, including overhead service trays, cables and conduits
  - signage and restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
  - working outdoors in warm climates
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Information may include:

- diagrams or sketches
- instructions issued by authorised organisational and external personnel
- memos
- regulatory and legislative requirements relating to concrete boom delivery
- relevant Australian standards
- safe work procedures relating to concrete boom delivery
- safety data sheets
- signage
- vehicle systems operations and the environment
- verbal, written and graphical instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Planning and preparation must include:

- assessing conditions and hazards
- determining work requirements and safety plans and procedures

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	• identifying and rectifying equipment defects • inspecting work sites.
Environmental requirements may include:	• designation of a pump washout area • clean-up management • dust suppression, noise and fume abatement • stormwater management • vibration management • waste management.
Functions must include:	• brakes • manoeuverability • steering.
System components must include:	• adaptors • boom components • hoses • lines.

Hazards associated with vehicle positioning and operations may include:	• interruption of concrete flow
	• mechanical failure of vehicle or parts
	• positioning hazards:
	  • insufficient clearance space between trucks and equipment
	  • placing vehicle and pump on sloping or unstable ground
	  • proximity of vehicle to trenches
	  • traffic-related hazards.

Hazards associated with positioning and operating boom may include:	• mechanical failure of the boom • proximity to overhead power lines or electrical equipment • traffic-related hazards.

Concrete ***delivery systems***:	• must include:
	  • boom-mounted conveyors
	  • lines
	• may include adaptors.

Concrete mixes vary in water content and, in order from wet to dry, include:	• block-fill • pool-mix • topping • slab • footing • curb and guttering.

Operator ***maintenance***:	• must include:
	  • authorised servicing
	  • cleaning
	  • monitoring, recording and reporting faults

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- may include:
  - conducting authorised minor replacements
  - providing assistance to maintenance personnel during maintenance and repair activities.

Unit Sector(s)

Concreting

Custom Content Section

Not applicable.

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CPCCCO3053A Slump test concrete

Modification History

This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

- Changes to performance criteria, required skills and knowledge, range statement, critical aspects for assessment, and methods of assessment
- Range of other minor editorial changes

Not equivalent to CPCCCO3033A Slump test concrete

Unit Descriptor

This unit of competency specifies the outcomes required to slump test concrete to ensure the mix is workable and complies with the delivery docket and specified order.
The unit includes sampling and slump testing to a set range or tolerance. It may also include working with others and as a member of a team.

Application of the Unit

This unit of competency supports the role of those who slump test concrete designated for use on residential, commercial or civil construction sites. The results of slump tests are used to confirm the appropriateness of the concrete for the concrete work planned.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to concreting work in different states and territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions, ***work health and safety (WHS) requirements*** and other ***information*** relevant to the work are identified, confirmed and applied for ***planning and preparation*** purposes.
		1.2	***Tools and equipment*** consistent with the job are selected, checked for serviceability, and faults are rectified and reported before work begins.
		1.3	Material quantity requirements are identified, calculated and confirmed according to plans, specifications and ***quality requirements***.
		1.4	***Environmental requirements*** are identified for the project according to environmental plans and regulatory obligations.
		1.5	Standard slumping cone is cleaned in preparation for slump testing.
2	Test concrete slump measurement.	2.1	***Sample*** of concrete is taken, using the correct sampling procedure, directly from the delivery truck's initial discharge.
		2.2	Slumping cone is filled and compacted according to standard ***slump testing*** procedures.
		2.3	Slumping cone is levelled off and surplus concrete is cleared from steel plate and slumping cone.
		2.4	Slumping cone is raised without moving the sample.
		2.5	Sample is measured for conformity with tolerance levels

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			and resampling is conducted if sample is outside tolerance.
		2.6	Collapsed or sheared samples are recorded.
3	Clean up.	3.1	Work area is cleared and materials disposed of, reused or recycled according to regulations, codes of practice and job specification.
		3.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and standard work practices.
		3.3	Work completion procedures are applied and relevant personnel notified that work is finished.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to:
  - evaluate own actions and make judgments about performance and necessary improvements
  - respond to change, such as differences in work site, and environmental and quality requirements
- numeracy skills to confirm correct slump of concrete
  - oral communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - report work site hazards to appropriate personnel, including faults in tools, equipment or materials
  - use language and concepts appropriate to cultural differences
- reading skills to:
  - interpret documentation, including drawings and specifications
  - interpret manufacturer instructions for safely handling tools, equipment and materials
  - understand written instructions, procedures and signage
- writing skills to complete pre-operational checklists and simple equipment fault forms

Required knowledge

- application of relevant Acts, regulations, Australian standards relating to the specification and supply of concrete
- environmentally friendly waste management practices applicable to the task
- general construction terminology
- processes for the accurate calculation of material requirements
- properties of concrete, including its strength, durability, workability and cohesiveness
- quality requirements relating to each stage of the concreting process
- processes for material storage
- slump testing techniques
- types, uses, characteristics and limitations of slump testing tools and equipment
- types, location and usage of relevant safety information:
  - job safety analyses (JSA) and safe work method statements (SWMS)
  - safety data sheets (SDS)
  - safety manuals and instructions for plant, tools and equipment

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- signage
- environmental and work site safety plans

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by observation in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- conduct three slump tests from different batches of concrete, to determine if the mix is workable and complies with the delivery docket and specified order
- determine when slump test fails and steps to take to communicate test outcomes to relevant personnel
- locate, interpret and apply relevant information, standards and specifications relating to slump testing
- comply with site safety plans and procedures
- comply with organisational policies and procedures relating to conducting slump tests
- safely and effectively operate and use plant, tools and equipment required to slump test concrete
- communicate and work effectively and safely with others.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure
- realistic tasks or simulated tasks covering the mandatory task requirements
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- safety data sheets.

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Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety requirements must comply with state and territory legislation and regulations and project safety plan, and may include:

- assistance of others or the use of manual or mechanical lifting devices with handling activities where size, weight or other issues, such as disability, are a factor
- emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures
- hazard control
- hazardous materials and substances
- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:

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- earth leakage boxes
- lighting
- power cables, including overhead service trays, cables and conduits
- signage and restricted access barriers
- surrounding structures
- traffic control
- trip hazards
- work site visitors and the public
- working at heights
- working in confined spaces
- working in proximity to others
- working outdoors in warm climates

- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Information may include:

- diagrams or sketches
- instructions issued by authorised organisational and external personnel
- memos
- regulatory and legislative requirements relating to slump testing concrete
- relevant Australian standards
- safe work procedures relating to slump testing concrete
- safety data sheets
- signage
- verbal, written and graphical instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Planning and preparation must include:

- assessing conditions and hazards
- determining work requirements and safety plans and procedures
- identifying and rectifying equipment defects
- inspecting work sites.

Tools and equipment:

- must include:
  - bullet nosed rod (600mm x 16mm)
  - sampling scoops
  - standard slump cones
  - steel rule
  - steel slump plate (500mm x 500mm)

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	• steel rod
	• may include:
	  • brushes
	  • buckets
	  • sponges
	  • trowels, including steel trowels
	  • wooden floats.

Quality requirements must include:	• internal organisational quality policy and standards • manufacturer specifications, where specified • relevant regulations and Australian standards • workplace operations and procedures.
Environmental requirements may include:	• clean-up management • dust and noise control • vibration management • waste management.
Sampling:	• must include that taken at initial discharge after 0.2 square metre of the load has been placed • may include routine samples taken at three places during the load • requires a standard slumping cone 200mm in diameter at the base, 100mm in diameter at the top and 300mm tall, with foot pieces for standing on while the sample is added.
Slump testing must include:	• use of a steel tray and steel rod • appropriate frequency of rodding to ensure penetration of concrete layers.

Unit Sector(s)

Concreting

Custom Content Section

Not applicable.

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CPCCCO3054A Operate concrete agitator trucks

Modification History

This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

- Changes to unit title, performance criteria, required skills and knowledge, range statement, and methods of assessment
- Range of other minor editorial changes

Not equivalent to CPCCCO3034A Conduct concrete agitator truck operations

Unit Descriptor

This unit of competency specifies the outcomes required to operate concrete agitator trucks in support of construction projects.
The unit covers planning and preparing for work, conducting operational checks, safely and effectively operating a concrete agitator truck and associated equipment for a range of mandatory tasks, and conducting operator maintenance and work finalisation activities. The unit may include working with others and as a member of a team.

Application of the Unit

This unit of competency supports the role of those who operate concrete agitator trucks used to supply concrete for residential, commercial or civil construction sites.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to concreting work in different states and territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions, ***work health and safety (WHS) requirements*** and other ***information*** relevant to the work are identified, confirmed and applied for ***planning and preparation*** purposes.
		1.2	***Tools and equipment*** consistent with job requirements are selected and checked for serviceability, and faults are rectified and reported before work begins.
		1.3	Materials appropriate to the work application are obtained, prepared, safely handled and located ready for use.
		1.4	***Environmental requirements*** are identified for the project according to environmental plans and regulatory obligations.
2	Conduct machine pre-operational checks.	2.1	Pre-start, start-up, park and shut-down procedures, including emergency shut-down procedures, are carried out according to manufacturer and site-specific requirements.
		2.2	Vehicle controls and ***functions*** are checked for serviceability and faults are rectified and reported.
		2.3	***Agitator controls*** and functions are checked for serviceability, and faults are rectified and reported.

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3	Operate the agitator truck.	3.1	Site hazards associated with truck operations are identified and safe operating techniques are used to minimise risk.
		3.2	Engine power is managed to ensure efficiency of concrete agitator truck movements and to minimise damage to the engine and gears.
		3.3	Engine power is coordinated with gear selection ensuring smooth transition and operation within torque range.
		3.4	Truck is operated to work instructions according to company operating procedures.
		3.5	Road and traffic conditions are monitored taking into account road standards, traffic flow, distance and load, and ensuring no injury to people or damage to property, equipment, loads and facilities.
		3.6	Truck is brought to a halt smoothly, using the engine retarder, gears and brakes and minimising the wear and tear on vehicle.
4	Load, transport and discharge concrete.	4.1	Concrete agitator truck is positioned at load and ***discharge points*** with a minimum of manoeuvres.
		4.2	Concrete agitator truck is loaded to within authorised carrying capacity of ***concrete mixes*** to suit the site and task conditions.
		4.3	Concrete agitator truck is moved from loading to discharge point safely and smoothly avoiding surge and sway.
		4.4	***Concrete is discharged*** according to task specifications.
		4.5	Discharge systems, including chutes and adaptors, are monitored and maintained throughout the operations.
5	Carry out driver maintenance.	5.1	Concrete agitator truck is safely parked, prepared for ***maintenance*** and shut down as per manufacturer manual and organisational requirements.
		5.2	Inspection and fault finding are conducted according to

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			manufacturer specifications and recorded according to organisational procedures.
		5.3	Defective parts are removed and replaced safely and effectively according to manufacturer instructions.
		5.4	Regular programmed maintenance tasks are carried out according to manufacturer and organisational requirements.
6	Clean up.	6.1	Work area is cleared and materials disposed of, reused or recycled according to project environmental management plan.
		6.2	Vehicle, bowl, tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to:
  - evaluate own actions and make judgments about performance and necessary improvements
  - respond to change, such as differences in work site, and environmental and quality requirements
- numeracy skills to calculate and confirm correct quantities of materials for work tasks
- oral communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - report work site hazards to appropriate personnel, including faults in tools, equipment or materials
  - use language and concepts appropriate to cultural differences
- reading skills to:
  - interpret documentation, including drawings and specifications
  - understand written instructions, procedures and signage
  - interpret manufacturer instructions for safely handling tools and equipment
- writing skills to complete pre-operational checklists and equipment fault forms

Required knowledge

- characteristics, technical capabilities and limitations of concrete agitator truck systems:
  - operational, maintenance and basic diagnostic procedures
  - safe operating techniques in all terrain
- construction activity sequences relating to concreting operations
- general construction terminology
- types, location and usage of relevant safety information:
  - job safety analyses (JSA) and safe work method statements (SWMS)
  - safety data sheets (SDS)
  - safety manuals and instructions for plant, tools and equipment
  - signage
  - environmental and work site safety plans
- quality requirements relating to the operation of a concrete agitator truck
- requirements for safe handling of materials
- site and equipment safety requirements, including site isolation and traffic control

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responsibilities and authorities
- state or territory regulatory requirements relating to concrete agitator truck operations

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by observation in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- conduct concrete agitator truck operations, over not less than three shifts and two different sites, including the safe and effective:
  - positioning of the vehicle at the load point
  - loading and transporting of concrete
  - discharging of concrete at work site to specification
  - discharging directly to site
  - discharging to wheelbarrow and hopper
  - applying emergency procedures
- conduct authorised operator maintenance
- locate, interpret and apply relevant information, standards and specifications relating to concrete agitator truck operations
- comply with site safety plans and procedures
- comply with organisational policies and procedures, relating to concrete agitator truck operations, including quality requirements
- communicate and work effectively and safely with others during each stage of the concrete agitator truck operation.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure
- realistic tasks or simulated tasks covering the mandatory task requirements

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- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- safety data sheets.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety requirements must comply with state and territory legislation and regulations and project safety plan, and may

- assistance of others or the use of manual or mechanical lifting devices with handling activities where size, weight or other issues, such as disability, are a factor
- emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures

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include:

- hazard control
- hazardous materials and substances
- hazards and risks, including uneven or unstable terrain, trees, fires, overhead services, bridges, buildings, excavations, traffic, embankments, structures and hazardous materials
- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - power cables, including overhead service trays, cables and conduits
  - signage and restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
  - working outdoors in warm climates
- safe parking practices, including ensuring access ways are clear; and that equipment and machinery are clear of overhangs and refuelling sites, a safe distance from excavations, and secured from unauthorised access or movement
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Information may include:

- instructions issued by authorised organisational and external personnel
- memos
- regulatory and legislative requirements relating to operation of concrete agitator trucks on construction sites
- relevant Australian standards
- safe work procedures relating to operation of concrete agitator trucks on construction sites
- safety data sheets
- signage
- verbal, written and diagrammatic instructions, including manufacturer specifications and instructions where specified
- work bulletins

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Planning and preparation must include:	• work schedules, plans and specifications. • assessing conditions and hazards • determining work requirements and safety plans and procedures • identifying and rectifying equipment defects • inspecting work sites.
Tools and equipment must include:	• hand tools and maintenance equipment associated with the particular concrete agitator truck.
Environmental requirements may include:	• clean-up management • dust and noise control • stormwater management • vibration management • waste management.
Functions must include:	• brakes • manoeuverability • steering.
Agitator controls:	• relate to speed, revolutions, forward and return • may be air, mechanical or electrically actuated.

Discharge points:	• must include:
	  • directly to site
	  • into a wheelbarrow and hopper
	• may include into a kibble.

Concrete mixes:	• may be relatively dry or increasingly wet • will include block-fill, pool mix, topping, slab, footing and kerb and guttering.

Maintenance:	• must include:
	  • authorised servicing
	  • cleaning
	  • monitoring, recording and reporting faults
	• may include:
	  • conducting authorised minor replacements
	  • providing assistance to maintenance personnel during maintenance and repair activities.

Unit Sector(s)

Concreting

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Custom Content Section

Not applicable.

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CPCCCO3055A Install topping slabs

Modification History

This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

- Changes to unit title, descriptor, elements and performance criteria, required skills and knowledge, range statement, critical aspects for assessment, and methods of assessment
- Range of other minor editorial changes

Not equivalent to CPCCCO3025A Resurface concrete

Unit Descriptor

This unit of competency specifies the outcomes required to install bonded or unbonded topping slabs to existing concrete.
The unit includes grinding and scabbling preparation techniques. It may also include working with others and as a member of a team.

Application of the Unit

This unit of competency supports the role of concreters working on residential, commercial or civil construction sites.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to concreting work in different states and territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions, ***work health and safety (WHS) requirements*** and other ***information*** relevant to the work are identified, confirmed and applied for ***planning and preparation*** purposes.
		1.2	Plant, ***tools and equipment*** consistent with job requirements are selected and checked for serviceability, and faults are rectified and reported before work begins.
		1.3	Material quantity requirements are identified and calculated according to plans, specifications and ***quality requirements***.
		1.4	***Materials*** appropriate to the work application are obtained, prepared, safely handled and located ready for use.
		1.5	***Environmental requirements*** are identified for the project according to environmental plans and regulatory obligations.
2	Prepare concrete for topping slab.	2.1	Need for concrete reinforcement is determined through consultation with ***relevant personnel*** and reinforcement is installed as required according to specifications.
		2.2	Preparation equipment is selected for the process.
		2.3	Existing concrete is scarified using appropriate ***preparation techniques*** according to specifications.
		2.4	Surface area to be topped is cleared of loose particles and debris.

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		2.5	Existing control joints in substrate are checked to ensure they are carried through and reflected in the proposed topping.
3	Pour concrete slab.	3.1	Existing concrete surface is prepared for topping slab with bonded topping or separation material according to specifications.
		3.2	Topping slab is poured on to existing concrete surface and screeded to specifications.
4	Cure and seal concrete.	4.1	Following setting, ***curing agents*** and ***curing techniques*** are applied to concrete according to specifications.
		4.2	Curing and sealing are maintained for period specified according to specifications.
5	Clean up.	5.1	Work area is cleared and materials disposed of, reused or recycled according to regulations, codes of practice and job specification.
		5.2	Plant, tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to:
  - evaluate own actions and make judgments about performance and necessary improvements
  - respond to change, such as differences in work site, and environmental and quality requirements
- numeracy skills to:
  - calculate and apply correct timings required for curing and sealing
  - calculate and confirm correct quantities of materials for work tasks
- oral communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - report work site hazards to appropriate personnel, including faults in tools, equipment or materials
  - use language and concepts appropriate to cultural differences
- reading skills to:
  - interpret documentation, including drawings and specifications
  - interpret manufacturer instructions for safely handling tools, equipment and materials
  - understand written instructions, procedures and signage
- writing skills to complete pre-operational checklists and simple equipment fault forms

Required knowledge

- application and use of control joints
- concrete resurfacing materials and techniques, including:
  - curing duration and effect on ultimate strength
  - role of abrasive blasting when installing bonded topping slabs
- general construction terminology
- mortar mix composition and additives relevant to topping slabs
- processes for calculating material requirements
- properties of concrete to be able to minimise waste, delay and faults in installing topping slabs
- quality requirements of the task, including:
  - internal organisational quality policy and standards
  - manufacturer specifications

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  - workplace operations and procedures
- processes for material storage and environmentally friendly waste management
- types and applications of concrete materials used when installing topping slabs
- types, characteristics, uses and limitations of plant, tools and equipment relevant to installing topping slabs and resurfacing existing concrete
- types, location and use of relevant safety resources and information such as:
  - job safety analyses (JSA) and safe work method statements (SWMS)
  - safety data sheets (SDS)
  - signage and barricades
- workplace and equipment safety requirements, including procedures for identifying, recording and rectifying equipment faults

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by undertaking a range of tasks in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- prepare the surfaces of at least four existing concrete slabs each measuring at least 10 square metres; two slabs must be prepared for bonded topping slabs and two for unbonded topping slabs
- install bonded and unbonded topping slabs to prepared surfaces
- cure and finish the topping slabs to specifications
- locate, interpret and apply relevant information, standards and specifications relating to installing topping slabs
- comply with site safety plans and procedures
- comply with organisational policies and procedures relating to installing topping slabs while maintaining quality requirements outlined in job requirements
- safely and effectively operate and use plant, tools and equipment required to install topping slabs
- communicate and work effectively and safely with others.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices

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- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- safety data sheets.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance**. *Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety requirements must comply with state and territory legislation and regulations and project safety plan, and may include:

- assistance of others or the use of manual or mechanical lifting devices with handling activities where size, weight or other issues, such as disability, are a factor
- emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures
- hazard control
- hazardous materials and substances

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- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - power cables, including overhead service trays, cables and conduits
  - restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
  - working outdoors in warm climates
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Information may include:

- instructions issued by authorised organisational and external personnel
- memos
- regulatory and legislative requirements relating to resurfacing concrete
- relevant Australian standards
- safe work procedures relating to resurfacing concrete
- safety data sheets
- signage
- verbal, written and diagrammatic instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Planning and preparation must include:

- assessing conditions and hazards
- determining work requirements and safety plans and policies
- identifying and rectifying equipment defects
- inspecting work sites.

Tools and equipment:

- must include:
  - brooms
  - floats
  - hoses

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- scabblers
- screeds
- shovels
- trowels
- wheelbarrows
- may include:
  - concrete mixers
  - grinders
  - power trowels
  - rollers
  - sand and water blasters.

Quality requirements must include:

- internal organisational quality policy and standards
- manufacturer specifications where specified
- relevant regulations and Australian standards
- workplace operations and procedures.

Materials:

- must include concrete
- may include:
  - acid solutions for cleaning and etching
  - bonding agents
  - curing compounds.

Environmental requirements may include:

- clean-up management
- dust and noise control
- stormwater management
- vibration management
- waste management.

Relevant personnel may include:

- engineer
- site manager.

Preparation techniques may include:

- abrasive blasting (sand or grit)
- acid etching
- grinding
- scabbling.

Curing agents may include:

- water-based curing compounds
- hessian
- polythene sheets
- water.

Curing techniques may include:

- applying curing agents
- applying plastic film
- hosing
- ponding
- using sprinklers.

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Unit Sector(s)

Concreting

Custom Content Section

Not applicable.

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CPCCCO4001A Supervise concreting work

Modification History

New unit.
This version first released with CPC08 Construction and Property Services Training Package Version 9.

Unit Descriptor

This unit of competency specifies the outcomes required to oversee site preparation for concreting work, initiate or direct concreting operations, and monitor concreting procedures to ensure timely completion of concreting works to the required quality standards.
The unit involves team leadership and the coordination and monitoring of concreting procedures.

Application of the Unit

This unit of competency applies to concreting work in residential, commercial and industrial projects.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to concreting work in different states and territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Supervise preparation for concreting work.	1.1	Work instructions are communicated to team members and questions are invited and addressed.
		1.2	Team members' understanding of ***work health and safety (WHS)*** and ***environmental requirements*** is confirmed.
		1.3	Team members' selection of ***materials, tools and equipment*** is confirmed as consistent with job requirements.
		1.4	Reported tool and equipment faults are processed according to WHS requirements and replacements are sourced as required.
		1.5	Team members' manual handling and placement of materials, tools and equipment at the site are monitored and directed to ensure safety and efficiency.
2	Supervise preparation of site for concrete pour.	2.1	Site excavation and preparation of sub-grade are monitored and directed to ensure safety, quality and timeliness.
		2.2	Formwork installation is monitored and directed to ensure compliance with work plans and specifications.
		2.3	Levelling procedures are conducted or monitored and directed to ensure levels are set according to work plans and specifications.
		2.4	Site is inspected to ensure compliance with plans and specifications and readiness for timely start of concrete

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			pour.
3	Monitor and manage concrete material delivery.	3.1	Quantities and specifications for concrete are confirmed with supplier according to order placed.
		3.2	Schedule of concrete delivery and delivery location and method are confirmed with supplier according to order placed.
		3.3	Concrete delivery documentation is checked to ensure correct concrete properties, and manufacturer's specialist is consulted if required to ***ensure accuracy of concrete supply*** mix.
		3.4	Concrete delivery is monitored and managed to ensure continuous and timely concrete supply for the project.
		3.5	Progress of concrete pour is monitored to assess potential shortfall or over-supply, and additional quantities of concrete essential for project completion are calculated and ordered as required, or order is reduced.
4	Monitor and manage concreting on-site work.	4.1	Concrete pour, compacting and levelling procedures are monitored and directed to ensure compliance with safety and environmental requirements and work plans and specifications.
		4.2	Finishing techniques and procedures are monitored and directed to ensure compliance with safety and environmental requirements and work plans and specifications.
		4.3	Weather conditions and contingencies are monitored and resources directed as required to ensure safety, quality and timeliness of project completion.
		4.4	Completed work is checked for compliance with work specifications and team members are coordinated to address areas of non-compliance as required.

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5	Supervise site clean-up.	5.1	Removal and storage or disposal of tools, equipment materials and waste are directed and monitored to ensure compliance with workplace, safety and environmental requirements.
		5.2	Team members are debriefed and opportunities for learning are identified and actioned as required.
		5.3	Project documentation is completed and processed according to workplace and project requirements.

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to develop and build understanding of:
  - types of concrete materials and supply volumes required for different types of concreting work
  - effects of weather conditions on progress of concrete work
- numeracy skills to assess and calculate resources required for different stages of concrete work in various weather conditions
- oral communication skills to lead and motivate team members
- reading skills to interpret plans, specifications and concrete manufacturer information
- writing skills to complete equipment fault forms

Required knowledge

- concreting procedures for different types of projects and safe work methods for different conditions
- principles of task management
- regulations, standards and codes of practice relevant to concreting work
- team leadership strategies
- tools, equipment and materials required for concreting work and safe operating and maintenance procedures
- types, properties and limitations of different types of concrete

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by performing a range of tasks in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- supervise team members conducting a minimum of three concreting projects in a residential, commercial or industrial setting, ensuring timely completion of each project to required quality standards and specifications
- locate, interpret and apply relevant information, standards and specifications to supervised concreting work
- communicate to team members and comply with:
  - site safety plan and WHS requirements, regulations and codes of practice applicable to workplace operations
  - organisational policies and procedures relating to supervising concreting work while maintaining quality requirements outlined in job specifications
- monitor and direct team members to:
  - safely and effectively operate and use plant, tools and equipment
  - safely handle concreting materials and components.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure
- realistic tasks or simulated tasks covering the mandatory task requirements
- specifications and work instructions relating to supervising concrete work
- tools and equipment appropriate to applying safe work

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practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- safety data sheets (SDS).

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance**.** ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety requirements must include:

- assistance of others or the use of manual or mechanical lifting devices with handling activities where size, weight or other issues, such as disability, are a factor
- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- hazard control
- hazardous materials and substances
- personal protective equipment (PPE) prescribed under

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legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - power cables, including overhead service trays, cables and conduits
  - signage and restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
  - working outdoors in warm climates
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Environmental requirements may include:

- clean-up management
- dust suppression
- noise management
- stormwater management
- vibration management
- waste management.

Materials, tools and equipment must include combinations of the following relevant to the particular type of project:

- agitators
- brooms
- floats
- grinders
- hoses
- rollers
- screeds
- shovels
- PPE
- trowels, including power trowels
- water blasters
- wheelbarrows.

Ensuring the accuracy of concrete supply must include:

- composition
- slump test measurement
- temperature.

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Unit Sector(s)

Concreting

Custom Content Section

Not applicable.

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CPCCDE2012A Carry out manual general demolition

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to remove components from buildings, structures and ancillary components using manual demolition techniques.

This unit includes the preparation of the site for the demolition process.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to use tools and equipment in manual demolition activities, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, ***tools and equipment*** are selected to carry out tasks that are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Prepare demolition site.	2.1. Requirements of ***site demolition plan*** are interpreted in accordance with workplace procedures. 2.2. ***Audit*** of property/dilapidation survey is conducted to determine condition of work site and surrounds prior to work commencing. 2.3. Confirmation is obtained from supervisor and regulatory authorities that all existing ***services*** have been disconnected. 2.4. Hazardous material is identified for separate handling in accordance with workplace requirements and instructions. 2.5. Fall protection devices are installed in accordance with workplace requirements.
3. Remove components.	3.1. Components are removed in a directed sequence in accordance with site demolition plan and demolition method statement, standards and workplace procedures. 3.2. Removed components are relocated to storage or disposal area in accordance with workplace requirements. 3.3. Materials and ***building components*** parts are safely and effectively handled using selected material handling techniques. 3.4. Materials and components identified for salvaging are handled, stored and stacked ready for transport in accordance with standard material handling practices and workplace procedures.

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ELEMENT	PERFORMANCE CRITERIA
4. Clean up.	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 4.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- evaluating own actions and making judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- recognising procedures, following instructions, responding to change and contributing to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- teamwork skills to coordinate own work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:

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REQUIRED SKILLS AND KNOWLEDGE

- use a range of mobile technology, such as two-way radio and mobile phones
- voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- general construction terminology
- hazards associated with the conduct of manual demolition tasks
- job safety analysis (JSA) and safe work method statements
- manual demolition processes and techniques
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- measurement and calculation
- method of operation and maintenance requirements of demolition tools and equipment
- plans, drawings and specifications
- quality requirements
- techniques associated with the conduct of manual demolition processes
- types, characteristics, uses and limitations of tools and equipment involved in the conduct of manual demolition processes
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum, given a site demolition plan and instructions, remove fixtures and fittings, a pitched metal/tiled roof, trusses, ceiling, external and internal walls, floor and floor support system of a two storey house and clean up, disposing or salvaging materials, ensuring:
  - correct identification of requirement and conduct of the demolition
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements

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EVIDENCE GUIDE

and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

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EVIDENCE GUIDE

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions,

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RANGE STATEMENT

	where specified • MSDS • memos • regulatory and legislative requirements pertaining to conduct of manual demolition processes • relevant Australian standards • safe work procedures relating to conduct of manual demolition processes • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including asbestos, lead-based paints, dust, pesticide residue, animal residue and the safe handling or quarantining procedures for each
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures

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RANGE STATEMENT

	• traffic control • trip hazards • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment:	• include: • angle grinders • barricades • bars (crow and pinch) • bolt cutters • brooms • chisels • compressors • concrete saws • electric testers • elevated work platforms • hacksaws • hammers • handsaws • picks and mattocks • pliers • pneumatic tools • power drills and saws • quick cut saws • safety and fall prevention equipment • scaffolds • shovels and spades • signs • sledge hammers • spanners and wrenches • water hoses and attachments • wheelbarrows.
Environmental requirements	• clean-up management

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RANGE STATEMENT

include:	• dust and noise • sedimentation control • vibration • waste management.
Site demolition plan:	• documents the demolition process and safe work practices.
Manual ***demolition*** processes include:	• dismantling or demolishing and removing materials and component parts of a building using only hand tools and small plant and equipment.
Demolition tasks may be performed:	• at ground level • at height • in a confined space • on a new construction site or an existing structure being renovated or extended which involves the complete or partial removal of components • over water • under water • underground.
Audit and preparation of work areas include:	• assessment of condition of property and surrounds • communication with those who may be affected by demolition task • erection of scaffolding • identification of hazardous materials • identification of positions of hoses and cables clear of hazards • installation of supports and bracing • location of signage and barricades • provision for site safety.
Services include:	• computer and communication • electricity • gas • telephone • water.

Building components include:	• concrete and masonry areas:
	  • edge strips
	  • pads
	  • paths
	  • retaining walls and fences

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RANGE STATEMENT

- slabs
- external sections of buildings:
  - attached structures, carports and sheds
  - non-load bearing walls
  - patios and decks
- fixtures and fittings
- internal sections of buildings:
  - built-in components
  - ceilings
  - cladding
  - flooring
  - load bearing and non-load bearing partition walling
  - wet area components.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCDE3014A Remove non-friable asbestos

Modification History

New to CPC08
Replaces unit CPCCDE3012A Encapsulate and remove asbestos
Not equivalent

Unit Descriptor

This unit of competency specifies the outcomes required to remove non-friable asbestos containing material (ACM). The unit includes preparing, containing and removing non-friable ACM, and includes knowledge of decontamination and disposal requirements.

Application of the Unit

Site location for work may be either domestic or commercial, and may be a demolition site, a new work site or an existing structure being renovated, extended, restored or maintained. Project sites may be construction sites and may also include ships, soils in relation to the non-friable asbestos removal process, and fences.

Licensing/Regulatory Information

Occupational licenses are required nationally.
Work must be completed according to relevant legislative, industry, customer and organisational requirements, including work health and safety (WHS) policies and procedures.
Regulatory mechanisms apply to this unit. This unit is required for all ACM removal workers engaged in the removal of non-friable ACM. Candidates are advised to check for regulatory requirements.

Pre-Requisites

CPCCOHS1001A Work safely in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for asbestos removal.	1.1	Work instructions and asbestos removal control plan (ARCP) are obtained and confirmed for preparation purposes.
		1.2	***Safety requirements*** and data gathered from an on-site assessment, an asbestos register where available, and other information sources are used to prepare for a safe and compliant removal process.
		1.3	***Tools, equipment*** and ***personal protective equipment*** (PPE) consistent with job requirements are selected to carry out tasks and checked for serviceability; and faults are rectified or reported prior to commencement.
		1.4	ARCP is accessed according to legislative and company requirements, and understood.
2	Prepare asbestos removal area and removal site.	2.1	***Non-friable asbestos containing materials*** to be removed are identified, referring to the asbestos register or following clarification by an approved competent person as required and according to ***workplace procedures***.
		2.2	Signage and barricade requirements are identified and implemented to delineate the work area.
		2.3	Decontamination procedure is tested according to workplace procedures.
		2.4	Materials and equipment required for removal of ACM from ***project sites*** are identified, checked and prepared for operation.
		2.5	Processes are undertaken to ensure the safety of the site, including deactivating or securing ***utilities*** where

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			necessary prior to commencing work.
3	Isolate removal site.	3.1	***Requirements to isolate the removal site*** safely are identified from the ARCP, and implemented according to legislative and company requirements.
		3.2	Boundaries of asbestos removal site are designated according to ARCP requirements.
		3.3	Occupants, neighbours and other affected parties are notified according to legislation and within limits of own responsibility and the code of practice.
4	Carry out asbestos removal process.	4.1	***Asbestos is removed*** from work area and work site as specified by the supervisor and in the appropriate manner, ensuring the safe use of tools and according to ARCP, legislative and regulatory requirements, and codes of practice.
		4.2	Removed ***asbestos is contained***, wrapped or otherwise sealed, and placed into removal bags or bins, sealed, labelled and, where loaded into a truck, the tray or skip is lined prior to removal of ACM from site according to regulatory requirements and company standards.
5	Carry out decontamination process.	5.1	Decontamination of the work area and tools is carried out according to workplace procedures, ARCP and regulatory requirements.
		5.2	***Decontamination of asbestos removal workers is carried out*** according to workplace procedures, ARCP and regulatory requirements.
		5.3	Asbestos removal and decontamination equipment is removed from the area according to ARCP and regulatory requirements.

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6	Clean up work site.	6.1	Work area is cleared and materials disposed of according to legislation, regulations, codes of practice and job specification.
		6.2	Plant, tools and equipment are cleaned, decontaminated, checked, maintained, removed from the work area, and stored according to manufacturer recommendations and regulatory requirements.
7	Contribute to and use documentation in line with regulatory requirements.	7.1	Contribution is made within limits of own responsibility to the preparation and use of ***documentation*** for regulatory notification processes according to legislative and company requirements.
		7.2	Steps are taken within limits of own responsibility to ensure clearance inspection requirements are met and clearance certificate is gained from a competent person or licensed asbestos assessor.
		7.3	Contribution is made within limits of own responsibility to the preparation and use of an emergency plan according to legislative and company requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication and appropriate level of language skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and apply:
    - documentation from a variety of sources
    - drawings and specifications
  - use language and concepts appropriate to cultural differences
- initiative and enterprise skills to:
  - evaluate own actions and make judgements about performance and necessary improvements
  - identify and report faults in tools, equipment and materials to appropriate personnel
- planning and organising skills to:
  - set out work
  - recognise procedures, follow instructions and contribute to workplace responsibilities, such as current environmental and safety systems and the ARCP
- teamwork skills to:
  - coordinate own work with others to action tasks
  - relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- self-management skills to:
  - work independently and in teams to read and interpret relevant documentation and to prepare for non-friable asbestos removal tasks according to the recommended safe work method and ARCP
  - set up the asbestos removal area and removal site according to the safe work method and ARCP
  - check, fit and use PPE, and hand and power tools safely
  - apply general WHS procedures for construction work, including:
    - identifying, avoiding and eliminating electrical hazards
    - working safely at heights and in confined spaces
    - applying safe work practices to the use of tools appropriate to ACM removal
    - handling hazardous materials safely
    - applying safe work methods for the removal of non-friable asbestos

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- follow correct cleaning, decontamination and disposal procedures

Required knowledge

- range of materials manufactured using asbestos, the type of asbestos used in each material, and the usual applications associated with the material, together with an understanding of:
  - health effects caused by exposure to ACM and requirement for safe handling and removal
  - health impacts on the community and requirement for safe handling and disposal
- general WHS procedures for construction work as required, including identifying and mitigating risks
- health hazards associated with friable ACM and circumstances that may change the nature of ACM from non-friable to friable, such as:
  - weathering
  - wear and tear
  - application of tools and equipment
  - accidental damage
- licensing requirements for the use of specific equipment, such as excavators
- safe work methods for the removal of non-friable asbestos
- requirements of current legislation and standards relating to asbestos safety, and the decontamination, transport and disposal of asbestos waste
- general construction terminology
- handling requirements of differing types of asbestos materials
- hazards associated with removal processes
- work area procedures
- job safety analysis (JSA) and safe work method statements (SWMS) if required for construction
- safety data sheets (SDS)
- materials storage and hazardous waste management
- method of operation, and cleaning, use and maintenance requirements of equipment
- plans, drawings and specifications, asbestos registers and register amendments
- quality requirements relating to the removal of non-friable asbestos
- risk assessment processes and contingency planning relating to the removal of non-friable asbestos
- techniques associated with enclosing and removing asbestos
- types, characteristics, uses and limitations of plant and equipment involved in enclosing and removing asbestos
- workplace and equipment safety requirements
- purpose and application of documentation for notification; and use of ARCP and clearance inspections

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, providing that simulated or project-based assessment techniques fully replicate workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person should demonstrate the ability to: • obtain and apply work instructions for the safe and correct removal of non-friable asbestos • set up the work area and test equipment for use in the removal process of non-friable asbestos • isolate the site prior to removal, complying with regulatory requirements • remove non-friable asbestos safely and comply with regulatory requirements • contain the ACM and ensure its handling and disposal are safe and comply with requirements • decontaminate self, work equipment, and the work site safely and correctly • complete documentation that supports the removal process within limits of own responsibility.
Context of and specific resources for assessment	This unit is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • research resources, including industry-related systems

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	information • safety data sheets. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge • all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed. Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

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The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Safety requirements will be specified from a range of sources that include:	• asbestos removal control plan
	• company policies and procedures, including:
	  • accessing toilets and other amenities
	  • managing work hours to minimise risk from tiredness
	  • working in heat and avoiding heat stress
	• JSA
	• legislation and regulations, including the Code of Practice for the Safe Removal of Asbestos
	• operating manuals and specifications for materials and equipment
	• SWMS
	• asbestos register.

Tools and equipment may require separate licensing for use and may include:	• high efficiency particulate air (HEPA) vacuum cleaners to comply with AS3544-1988 and AS4260-1997 as amended from time to time • atomiser and water spray bottles (not pressurised) • hoses and spray fittings • barricades, including tape, para-webbing and fencing • bars (crow and pinch) • bolt cutters • buckets • cold chisels • excavators • hand drills (manual and low-speed only) • fire extinguishers • hammers • hand tools (full kit) • ladders conforming to construction regulations • scaffolds • scrapers • shovels and spades • staple guns.

Personal protective equipment will be specified to the requirements of the job and must include:	• protective clothing, such as:
	  • disposable coveralls with fitted hood and cuffs
	  • safety footwear (pull-on, not lace-up)
	  • protective eyewear

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	• disposable or protective gloves • correct face fitting and use of respiratory protective equipment (RPE) • respiratory protection required for the job, including class P1 and P2 face masks • spare sets of PPE.
Materials may include:	• approved and branded plastic bags, including heavy-duty polythene bags (200 µm minimum thickness) • duct tape • foam infill spray • acrylic paint to seal ACM • polyvinyl alcohol (PVA) adhesive as spray to seal ACM • rags or other material wipes (used once) • signs • 200 µm unused (not recycled) plastic sheeting or drop sheet.
Non-friable asbestos containing materials may include: Note: • Non-friable asbestos is also known as bonded asbestos • ACM notionally listed as non-friable may become friable due to weathering or damage	• asbestos cement • asbestos cement moulded guttering • asbestos cement sheets • asbestos tiles • bitumastic felts and materials • adhesives and glues • compressed asbestos cement panels • floor vinyl covering • mortar • resinous backing board • sealant mastic • tape.

Workplace procedures may include:	• environmental requirements, such as:
	  • clean-up management
	  • dust and noise management
	  • notification to occupants, neighbours and other affected parties
	  • sedimentation control
	  • vibration management
	  • waste management, including the safe disposal of ACM
	• quality requirements, such as:
	  • internal company quality policy and standards
	  • manufacturer specifications
	  • relevant regulations, including Australian standards
	  • workplace operations and procedures.

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Project sites may include:	• residential, commercial, industrial and public buildings • plant, equipment and fire boards (e.g. friction plant and gaskets) • demolition sites • electricity supply authority or work site • fences • ships and other forms of transport • sites for new building development.
Utilities may include:	• air conditioning • electricity • water services.

Requirements to isolate the removal site:	• will reflect the nature of the site
	• must comply with legislative requirements and the ARCP
	• may include:
	  • using barriers
	  • using signage
	  • ensuring occupants are aware of the need to stay away from the removal site
	  • ensuring isolation has occurred by a licensed electrician and that this is documented.

Asbestos is removed in a manner that complies with legislative and company requirements, and may include:	• wet method (most preferred):
	  • saturate material by gently spraying with water and surfactant mixture (PVA in water ratio of 5:1)
	  • remove materials in sections with the minimum amount of cutting and separation and using hand tools as appropriate
	  • place removed sections in appropriate containers or packaging
	  • Note: The application of the wet asbestos removal method requires the disconnection of the building's power supply and use of a temporary power source fitted with earth leakage and residual current device (RCD)
	• dry method (least preferred):
	  • to be used only where conditions prohibit use of the wet spray method, i.e. in the vicinity of electrical conductors
	  • fully encapsulate the work area with plastic sheeting
	  • use air respirators appropriate to the job
	  • ensure removal methods minimise the production of airborne material, for example the use of asbestos vacuum cleaners for shadow vacuuming **(Note:** domestic vacuum cleaners even fitted with a HEPA filter are unsuitable)
	  • place removed material immediately in appropriate containers and dampen with sprayed mist.

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Asbestos is contained and sealed using a range of techniques, including:	• double-bagging • using heavy-duty polythene bags (200 µm minimum thickness) labelled with an appropriate warning • using drums or bins in good condition with well-fitting lids labelled with appropriate warning signage or labels. **Note:** If too large for a bin or bag, a skip or vehicle tray may be used provided it is double-lined with heavy-duty thick plastic sheeting. When ACMs are loaded on a truck tray, the ACMs must be wetted down and then fully wrapped and sealed with a layer of 200 µm sheeting or bagged. Labelling must occur.

Decontamination of asbestos removal workers is carried out:	• **using a range of techniques, including**:
	  • 'buddy' vacuuming
	  • decontamination unit for large non-friable removals in certain circumstances
	  • wet wiping.

Documentation may include:	• air-monitoring results, where necessary • asbestos register • notification to regulator of asbestos removal work • clearance certificates • asbestos removal control plans • procedures for the WHS management system and the emergency plan • equipment test reports • health-monitoring program • RPE face fits • competency training certificates.

Unit Sector(s)

Construction

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CPCCDE3015A Remove friable asbestos

Modification History

New to CPC08
Replaces unit CPCCDE3012A Encapsulate and remove asbestos
Not equivalent

Unit Descriptor

This unit of competency specifies the outcomes required to remove friable asbestos containing material (ACM). The unit includes preparing, enclosing and removing friable ACM, and includes knowledge of decontamination and disposal requirements.

Application of the Unit

Site location for work may be either domestic or commercial, and may be a demolition site, a new work site or an existing structure being renovated, extended, restored or maintained. Project sites may be construction sites and may also include ships, soils in relation to the friable asbestos removal process, and fences.

Licensing/Regulatory Information

Occupational licenses are required nationally.
Work must be completed according to relevant legislative, industry, customer and organisational requirements, including work health and safety (WHS) policies and procedures.
Regulatory mechanisms apply to this unit. This unit is required for all ACM removal workers engaged in the removal of friable ACM. Candidates are advised to check for regulatory requirements.

Pre-Requisites

CPCCOHS1001A	Work safely in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for asbestos removal.	1.1	Work instructions and asbestos removal control plan (ARCP) are obtained and ***information*** is confirmed and applied for preparation purposes.
		1.2	***Safety*** requirements and data gathered from an on-site assessment, an asbestos register where available, and other information sources are used to prepare for a safe and compliant removal process.
		1.3	Required quantity of ***materials*** is calculated according to plans, specifications and ***quality requirements***.
		1.4	***Environmental requirements*** are identified for the project according to environmental plans, and regulatory obligations are applied.
		1.5	Processes required to meet health surveillance requirements are undertaken and contributions to air monitoring are made in line with level of authority and responsibility.
		1.6	***Preparation*** for the removal process is finalised and authorised obtained according to legislative and company requirements and the ARCP.
		1.7	***Plant, equipment*** and ***personal protective equipment*** (PPE) consistent with job requirements are selected to carry out tasks, checked for serviceability, and faults are rectified or reported prior to commencement.

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2	Prepare asbestos removal area and removal site.	2.1	***Friable asbestos containing materials*** to be removed are identified, asbestos register is checked, and clarification sought from supervisor as required according to workplace procedures.
		2.2	Signage and barricade requirements are identified and implemented to delineate the work area from the site area.
		2.3	Decontamination unit is positioned and assembled to manufacturer requirements.
		2.4	Services are connected to decontamination unit according to regulatory requirements and codes of practice.
		2.5	Decontamination procedure is tested within scope of own responsibility and according to workplace procedures and the ARCP.
		2.6	Materials and equipment required for removal of ACM from ***project sites*** are identified, checked and prepared for operation.
		2.7	Processes are undertaken to ensure the safety of the site, including ensuring where necessary that ***utilities*** are deactivated, contained, diverted or secured prior to commencing work.
		2.8	Occupants, neighbours and other affected parties are notified according to legislation and the code of practice and within scope of own responsibility.
3	Enclose removal site.	3.1	***Requirements to enclose the removal site*** safely to prevent the further release of fibres are followed according to the ARCP and legislative and company requirements.
		3.2	Types of enclosures, impact of the size of the removal on the methodology selected, and types and use of ***removal processes*** are identified.
		3.3	Contribution is made within limits of responsibility to ensure negative air pressure is maintained within the enclosure in line with legislative requirements, and enclosure is inspected and smoke tested for air tightness.

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		3.4	Notification of proposed asbestos removal is provided to the licensed assessor within required timeframe and limits of own responsibility.
4	Carry out asbestos removal process.	4.1	***Asbestos is removed from work site*** and work area using ***safe work methods*** and according to ARCP, regulatory requirements and codes of practice.
		4.2	Removed ***asbestos is contained*** and placed into double-lined removal bags or bins, sealed, labelled and removed from site according to regulatory requirements and the ARCP.
		4.3	Manual-handling principles for bagged and sealed ACM are used wherever possible to prevent breakages of plastic.
5	Carry out decontamination process.	5.1	Decontamination unit is used according to manufacturer and regulatory requirements and codes of practice.
		5.2	Decontamination of the work area is carried out according to workplace procedures, ARCP and regulatory requirements.
		5.3	***Decontamination of asbestos removal workers is carried out*** according to workplace procedures, ARCP and regulatory requirements.
		5.4	Approval to dismantle asbestos removal and decontamination equipment is gained according to regulatory requirements and codes of practice.
		5.5	Asbestos removal and decontamination equipment is removed from the area according to the ARCP and regulatory requirements, and following clearance from the licensed asbestos assessor.
6	Clean up work site.	6.1	Work area is cleared and materials disposed of according to legislation, regulations, codes of practice and job specification.
		6.2	Plant, tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and standard work practices.

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		6.3	Work area is inspected for asbestos dust and debris to ensure compliance prior to a clearance inspection.
7	Contribute to and use documentation in line with regulatory requirements.	7.1	Contribution is made within limits of own responsibility to the preparation and use of ***documentation*** for regulatory notification processes, according to legislative and company requirements.
		7.2	Steps are taken within limits of own responsibility to ensure clearance inspection requirements are met and clearance certificate is gained.
		7.3	Contribution is made within limits of own responsibility to the preparation and use of an emergency plan and according to legislative and company requirements.
		7.4	Contribution is made within limits of own responsibility to the preparation and use of a certified safety management systems (SMS) according to legislative and company requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication and appropriate level of language skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and apply:
    - documentation from a variety of sources
    - drawings and specifications
  - use language and concepts appropriate to cultural differences
- initiative and enterprise skills to:
  - evaluate own actions and make judgements about performance and necessary improvements
  - identify and report faults in tools, equipment and materials
- planning and organising skills to:
  - plan and set out work
  - recognise procedures, follow instructions and contribute to workplace responsibilities, such as current environmental and safety systems and the ARCP
- teamwork skills to:
  - coordinate own work with others to action tasks
  - relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- self-management skills to:
  - work independently and in teams to read and interpret relevant documentation and to plan friable asbestos removal tasks according to the recommended safe work method
  - set up the asbestos removal area according to the safe work method
  - apply general WHS requirements and construction safety requirements, including applying safe work methods for the removal of friable asbestos
  - follow correct cleaning, decontamination and disposal procedures
  - use, fit and maintain PPE, decontamination equipment, and hand and power tools safely

Required knowledge

- range of materials manufactured using asbestos, the type and characteristics of asbestos used in each material, the usual applications associated with the material

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- methods and purpose for assessing hazards relating to friable ACM, together with an understanding of:
  - health effects caused by exposure to ACM and requirement for safe handling and removal
  - health impacts on the community and requirement for safe handling and disposal
- decontamination techniques
- general WHS procedures for construction work
- health hazards associated with friable ACM, such as:
  - weathering
  - wear and tear
  - application of tools and equipment
  - accidental damage
- licensing requirements for the use of specific equipment, such as excavators
- hazards associated with using enclosures and removing friable asbestos
- requirements of current legislation and standards relating to asbestos safety, and the decontamination and disposal of asbestos waste
- general construction terminology
- handling requirements of differing types of asbestos materials
- work site and work area procedures
- job safety analysis (JSA) and safe work method statements (SWMS) if required for construction
- safety data sheets (SDS)
- materials storage and hazardous waste management
- method of operation, and cleaning, use and maintenance requirements of equipment
- demolition plant and equipment as applicable to asbestos removal only
- plans, drawings and specifications, asbestos registers and register amendments
- quality requirements relating to the removal of friable asbestos
- risk assessment processes and contingency planning relating to the removal of friable asbestos
- techniques associated with enclosing and removing asbestos, including:
  - use of large and small-scale enclosures for different sites
  - use of negative pressure exhaust units
  - encapsulation methods prior to removal
- types, characteristics, uses and limitations of plant and equipment involved in removing asbestos
- workplace and equipment safety requirements
- application of the documentation for notification; and use of ARCP, clearance inspections, visual and air-monitoring processes and clearance certificates
- use of certified WHS management system and emergency plan

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, providing that simulated or project-based assessment techniques fully replicate workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person should demonstrate the ability to: • obtain and apply work instructions for the safe and correct removal of friable asbestos • set up the work area and test equipment for use in the removal process of friable asbestos • isolate the site prior to removal, complying with regulatory requirements • remove friable asbestos safely, complying with regulatory requirements • contain the asbestos containing material and ensure its handling and disposal are safe and comply with requirements • decontaminate self, work equipment and work site safely and correctly • complete documentation that supports the removal process within limits of own responsibility.
Context of and specific resources for assessment	This unit is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • research resources, including industry-related systems

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	information • safety data sheets. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge • all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed. Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information to ensure the safe and correct completion of the job may include:	• ARCP
	• licensed asbestos assessor's report
	• asbestos register
	• company policies and procedures, including:
	  • accessing toilets and other amenities
	  • managing work hours to minimise risk from tiredness
	  • working in heat and avoiding heat stress
	• operating manuals and specifications for materials and equipment
	• SWMS or JSA for construction as required
	• diagrams or sketches
	• instructions issued by authorised organisational or external personnel
	• manufacturer specifications and instructions, where specified
	• SDS
	• regulatory and legislative requirements for enclosing and removing asbestos
	• relevant Australian standards and codes
	• safe work procedures relating to enclosing and removing asbestos
	• memos, verbal and written instructions, and diagrams
	• work bulletins
	• work schedules, plans and specifications.

Safety procedures are to be according to state and territory legislation and regulations and project safety plan, and may include:	• emergency procedures, including extinguishing fires and evacuation • handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability, are a factor • hazard control • hazardous materials and substances • organisational first aid requirements • PPE prescribed under legislation, regulations and workplace policies and practices • safe operating procedures according to WHS management system, including the conduct of operational risk assessment and treatments associated with:

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	• deactivating or securing utilities, including electrical, air conditioning and water services • earth leakage boxes • falling objects • lighting • plant movement • power cables, including overhead service trays, cables and conduits • restricted access barriers • surrounding structures • traffic control • trip hazards • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Materials may include:	• acrylic paint to seal ACM • approved and branded or labelled plastic bags • duct tape • foam infill spray • gaffer tape • plastic sheeting • polyvinyl alcohol (PVA) adhesive as spray / spray tack glue • rags or other material wipes • heavy-duty polythene bags (200 µm minimum thickness) • 200 µm unused (not recycled) plastic sheeting or drop sheet • signs • timber frames, nails, aluminium poles and other materials required for enclosures • glove bag material.
Quality requirements may include:	• internal company quality policy and standards • manufacturer specifications • relevant regulations, including Australian standards • workplace operations and procedures.
Environmental requirements must fully reflect legislation and the Code of Practice for the	• clean-up management • dust and noise management • sedimentation control • vibration management

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Safe Removal of Asbestos, including:	• waste management, including the safe disposal of asbestos containing materials, including waste water from decontamination unit (DCU).
Preparation may include:	• assessing conditions and hazards • determining work requirements, and safety plans and policies • identifying equipment defects • identifying, preparing for enclosing, and removing asbestos from a work site according to an ARCP work site inspection.
Plant and equipment may require separate licensing for use and may include:	• high efficiency particulate air (HEPA) vacuum cleaners to comply with AS3544-1988 and AS4260-1997 as amended from time to time • anchorage points for the enclosure • negative air pressure enclosures or bubbles • enclosure equipment • atomiser and water bottles (not pressurised) • barricades, including barricade tape, para-webbing, hoarding or fencing • bars (crow and pinch) • decontamination unit and remote decontamination unit • decontamination facilities • excavators • hammers • ladders to comply with construction regulations if required • hoses and spray fittings • flame retardant polythene • hardboard / corex • scaffolds • scrapers • shovels and spades • smoke-testing equipment • static lines.

Personal protective equipment will be specified to the requirements of the job and may include:	• protective clothing, such as:
	  • disposable coveralls with fitted hood and cuffs
	  • safety footwear (pull-on, not lace-up)
	  • protective eye wear, such as safety glasses
	  • full body safety harness
	  • disposable protective gloves
	• correct respiratory protection class P3, full face respirators and airline respirators for negative air enclosures
	• correct face fitting and use of respiratory protective equipment (RPE)
	• spare sets of PPE.

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Friable asbestos containing materials are easily crumbled or reduced to powder by hand, and may include:	• asbestos backing on vinyl flooring
	• material in degraded condition that has rendered the material friable, including:
	  • asbestos cement
	  • asbestos cement moulded guttering
	  • asbestos cement sheets
	  • corrugated asbestos cement roofing sheets in degraded condition
	• asbestos in matrix of sprayed vermiculite
	• low density board
	• sprayed on fireproofing, soundproofing and thermal insulation
	• acoustic plaster soundproofing
	• thermal insulation
	• gaskets that have become friable
	• sealants that have become friable
	• pipe lagging
	• woven textiles, ropes, tapes and braids
	• decorative coatings.

Project sites may include:	• residential, commercial, industrial and public buildings • plant, equipment and fire boards (e.g. friction plant and gaskets) • demolition sites • fences • ships and other forms of transport • sites for new building development.
Utilities may include:	• air conditioning • electricity • water services.

Requirements to enclose the removal site:	• will reflect the nature of the site and must comply with legislative and company requirements
	• may include the use of:
	  • negative pressure exhaust units to prevent the escape of asbestos fibres from contained asbestos work areas
	  • enclosures for large-scale asbestos removal work, including:
	  • design and installation considerations
	  • testing of enclosures
	  • decontamination
	  • mini-enclosures for small-scale asbestos removal work
	  • glove bag and wrap and cut removal method
	  • decontamination unit

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	• waste water and filtration or handling unit.
Removal processes may include the following methods:	• dry • wet • saturation.

Asbestos is removed from work site in a manner that complies with legislative and company requirements, and may include:	• wet method, including:
	  • saturate material by gently spraying with water and surfactant mixture (PVA in water ratio of 5:1)
	  • remove materials in sections with the minimum amount of cutting and separation, using hand tools as appropriate
	  • place removed sections in appropriate containers or packaging
	  • **Note:** The application of the wet asbestos removal method requires the disconnection of the building's power supply and use of a temporary power source fitted with earth leakage and residual current device (RCD)
	• dry method if required due to electrical safety issue
	• saturation method.

Safe work methods may include:	• compliant set-up of the asbestos work area, including set-up of negative air, lighting, water and emergency supplies • placing adequate signage around friable asbestos work site • fire and emergency system requirements • enclosure of the asbestos removal area and the plant, equipment and fixtures remaining in the area • testing the asbestos enclosure in the work area • procedures for entering and leaving the enclosure in the asbestos work area • safe techniques for removing friable asbestos • packaging and removing contaminated plant, tools and equipment • cleaning and decontaminating tools, equipment and the asbestos work area • decontaminating and demobilising the asbestos work site • final decontamination of personnel • disposing of asbestos waste.
Asbestos is contained and sealed before removing from the work area and work site using a range of techniques, including:	• double-bagging • using heavy-duty polythene bags (200 µm minimum thickness) labelled with an appropriate warning • using drums or bins in good condition with well-fitting lids labelled with appropriate warning signs or labels • mini enclosures, such as glove bag and wrap and cut methods (suitable for friable ACM removal from small areas).

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	Notes: • For larger-scale disposal, the supplier of a waste removal bin must be informed of the usage to ensure appropriate and legal disposal. • If too large for a bin or bag, a skip or vehicle tray may be used provided it is double-lined with heavy-duty thick plastic sheeting. When ACMs are loaded on a truck tray the ACMs must be wetted down and then fully wrapped and sealed with a layer of 200 µm sheeting or bagged. Labelling must occur.
Decontamination of asbestos removal workers is carried out using:	• 'buddy' vacuuming • decontamination unit for large non-friable removals in certain circumstances • wet wiping.
Documentation may include:	• ARCP • air-monitoring plans for control air monitoring • air-monitoring results • asbestos register • notification of asbestos removal work to the regulator • clearance certificates • knowledge of the procedures in the certified SMS • emergency plan development • equipment test certificates • health-monitoring program • RPE face fits • competency training certificates.

Unit Sector(s)

Construction

Custom Content Section

Not applicable.

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CPCCDE3016A Identify hazards on demolition sites and apply risk management strategies

Modification History

New unit.
This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

Unit Descriptor

This unit of competency specifies the outcomes required to identify hazards common to demolition work, as well as undiscovered hazards that may arise during the course of work on demolition sites; and to assess risks and apply risk management strategies according to compliance and workplace requirements.
Demolition hazards include those relating to:

- demolition work health and safety (WHS)
- public health and safety
- contamination of the environment.

Application of the Unit

This unit of competency supports the induction procedure for specialist demolition workers before beginning work on site. Specialist demolition workers dismantle and demolish public, residential, commercial and industrial buildings and structures of all types, including chemical processing plants, and process the resulting materials for salvage, recycling and waste disposal.
This unit does not replace requirements for completion of construction work health and safety units.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to demolition work in different States and Territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Review site characteristics and work plans.	1.1	Issues relating to the age and integrity of buildings and structures, and construction methods and materials used, are identified and applied to review of potential risks.
		1.2	Approved demolition plan and safe work method statements (SWMS) are reviewed and information relating to hazards and risk management strategies is applied to participation in job briefing according to work role requirements.
		1.3	Job roles and responsibilities for people involved in the project are identified and clarified according to workplace procedures.
2	Apply WHS risk management strategies to work activities on demolition sites.	2.1	***Hazards that may cause trips, falls or falling objects*** are identified and risk management strategies applied according to compliance, site and workplace requirements.
		2.2	Hazards relating to ***hazardous substances*** are identified and risk management strategies applied according to compliance, site and workplace requirements.
		2.3	Hazards relating to ***structural composition and integrity of structures*** are identified and risk management strategies applied according to compliance, site and workplace requirements.

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		2.4	Hazards relating to ***services*** are identified and risk management strategies applied according to compliance, site and workplace requirements.
		2.5	Hazards relating to the use of mobile and static plant, tools and equipment are identified and risk management strategies applied according to compliance, site and workplace requirements.
		2.6	Hazards relating to the use of high reach excavators are identified and risk management strategies applied according to compliance, site and workplace requirements.
		2.7	Hazards relating to noise, dust and vibrations are identified and risk management strategies applied according to compliance, site and workplace requirements.
		2.8	***Hazards that may cause fire or explosions*** are identified and risk management strategies applied according to compliance, site and workplace requirements.
		2.9	Work site is monitored during demolition process for signs of ***undiscovered hazards*** and risk management strategies are applied according to compliance, site and workplace requirements.
		2.10	WHS hazards and incidents are reported according to compliance, site and workplace requirements.
3	Apply public health and safety risk management strategies on demolition sites.	3.1	Site boundaries and exclusion zones are identified and strategies to prevent access by unauthorised persons are implemented according to compliance, site and workplace requirements.
		3.2	Site traffic access and egress points and pedestrian and vehicle routes are identified and traffic management plan is applied according to compliance, site and workplace requirements.
		3.3	Demolition activities with potential to cause dust, noise and vibrations are identified and risk management strategies are applied according to compliance, site and workplace requirements.
		3.4	Demolition activities resulting in falling structures or flying debris or with potential to affect structural

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			integrity of adjoining buildings are identified and risk management strategies applied according to compliance, site and workplace requirements.
		3.5	Public health and safety hazards and incidents are reported according to compliance, site and workplace requirements.
4	Apply environmental risk management strategies on demolition sites.	4.1	Opportunities to maximise environmentally sound use of energy and water are identified and strategies applied according to environmental compliance, site and workplace requirements.
		4.2	Potential risks to air quality resulting from demolition work are identified and risk management strategies applied according to environmental compliance, site and workplace requirements.
		4.3	Potential risks associated with ***stormwater management*** are identified and risk management strategies applied according to environmental compliance, site and workplace requirements.
		4.4	Potential risks to groundwater and groundwater monitoring wells are identified and risk management strategies applied according to environmental compliance, site and workplace requirements.
		4.5	Potential risks to the environment resulting from removing and handling hazardous substances and waste materials are identified and risk management strategies applied according to environmental compliance, site and workplace requirements.
		4.6	Environmental hazards and incidents are reported according to environmental compliance, site and workplace requirements.
5	Contribute to improvement of demolition risk management strategies.	5.1	Demolition methods, procedures and risk management strategies are reviewed and discussed with team members to develop ideas for improvements in risk management according to workplace procedures.
		5.2	Industry professional development activities relating to demolition risk management are undertaken as required, according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to:
  - evaluate own actions and make judgements about performance and necessary improvements
  - recognise signs indicating undiscovered or unpredicted hazards on a demolition site, for example buried asbestos
  - respond to change, such as differences in work site environmental and sustainability requirements
- numeracy skills to:
  - interpret scales on demolition plans and drawings
  - measure site boundaries and exclusion zones
- oral communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - report risks and hazards on the work site, including faults in tools, equipment and materials
  - use language and concepts appropriate to cultural differences
- reading skills to:
  - interpret documentation, including drawings and specifications
  - understand written instructions, procedures and signage
- writing skills to complete simple equipment fault forms

Required knowledge

- demolition methods and procedures
- general construction terminology
- hazards occurring and risk management strategies used on demolition sites
- types of plant, tools and equipment applicable to demolition tasks, and:
  - applications of each tool or piece of equipment
  - maintenance requirements
  - safe methods of operation for different demolition tasks

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace by observation of the identification of hazards on demolition sites and the application of risk management strategies.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- locate, interpret and apply information, standards and specifications relevant to the identification of hazards and application of risk management strategies on demolition sites
- comply with site safety plan and the requirements of WHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures and quality requirements
- communicate and work effectively and safely with others
- follow work instructions, operating procedures and inspection practices to identify hazards and apply risk management strategies on demolition sites.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- must meet relevant compliance requirements.

Resource implications for assessment include:

- realistic tasks covering the mandatory task requirements
- relevant specifications and work instructions
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- information relevant to each task, such as safety data sheets.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the following methods:

- direct observation of tasks in real work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

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Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Hazards that may cause trips, falls or falling objects must include:

- equipment failure
- movement of loads
- partial demolition of building elements
- pits
- plant, tools and equipment and associated cables, hoses and lines
- penetrations:
  - floor
  - roof
  - wall
- stacked or stored debris, materials and waste
- structural instability of building
- uncleared rubble and accumulated loads on suspended slabs
- working at heights.

Hazardous substances must include:

- asbestos
- flammable or toxic residues in pipework and storage tanks
- lead-based paints
- ozone depleting substances
- polychlorinated biphenyls (PCBs)
- silica.

Structural composition and integrity of

- effect of fire on hazardous materials
- fire-damaged structures

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structures must include:

- load-bearing ability of structural elements due to build-up of demolition debris
- partially demolished building elements with sharp protrusions
- pre- and post-tensioned concrete structures
- precast components
- ruinous structures
- severely corroded, deteriorated or degraded structures
- special structures
- termite damaged structures.

Services:

- must include:
  - air
  - chemical product (fuel)
  - electricity
  - electrical distribution assets
  - gas
  - hydraulic
  - services specific to manufacturing processes
  - steam
  - telecommunications
  - wastewater
  - water
- may be:
  - overhead
  - underground
  - disconnected
  - live:
    - services adjacent to demolition site
    - services required during demolition process
  - located within structural elements
  - temporary
  - undocumented:
    - extensions
    - relocations.

Hazards that may cause fire or explosions are:

- chemical-containing drums
- dust, including coal, flour, wheat and sugar
- hot work
- flammable residues in pipework and storage tanks
- pressurised containers:
  - fire extinguishers
  - gas cylinders

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	• hydraulic accumulators • underground storage tanks.
Undiscovered hazards may include but are not limited to:	• asbestos • biological waste, including animal faeces • chemicals • contaminated soils • process waste • syringes • termite damage • underground storage tanks.
Stormwater management may include:	• contamination • discharge from site • sediment control.

Unit Sector(s)

Demolition

Custom Content Section

Not applicable.

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CPCCDE3017A Select and use hand tools and equipment for demolition tasks

Modification History

New unit.
This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

Unit Descriptor

This unit of competency specifies the outcomes required to select and use hand tools and equipment safely and effectively to complete individual demolition tasks.

Application of the Unit

This unit of competency supports demolition workers who perform demolition tasks, such as removing fixtures and fittings, ceilings, walls, floors and floor support systems of all types of buildings using hand tools and equipment.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to demolition work in different States and Territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions are obtained using relevant ***information***, confirmed with colleagues or supervisor, and applied to planning and preparation.
		1.2	***Work health and safety (WHS) requirements*** are identified and applied to task planning according to safety plans and policies and work site requirements.
		1.3	***Environmental requirements*** are identified and applied according to environmental plans and regulatory obligations.
2	Identify and check tools and equipment.	2.1	***Hand tools and equipment*** to be used in the demolition process are identified and checked for serviceability, and faults are rectified and reported.
		2.2	Functions and methods of operation of demolition tools and equipment are identified from specifications, standards and manufacturer instructions.
		2.3	Specific WHS requirements for the selected tools and equipment are identified and applied.
3	Complete demolition tasks.	3.1	Work site inspection is conducted and ***hazards associated with individual demolition tasks*** are assessed immediately prior to commencing work according to workplace procedures.
		3.2	Safe demolition work method is amended if required and confirmed with colleagues or supervisor.

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		3.3	Work area is prepared for the use of demolition tools and equipment.
		3.4	Tools and equipment that meet the requirements of the ***demolition task*** are selected.
		3.5	***Pre-operational checks*** are completed according to manufacturer recommendations.
		3.6	Tools and equipment are used for their intended purpose in demolition tasks according to regulations, standards, codes of practice and workplace requirements.
		3.7	Work progress and hazards or issues arising during work tasks are ***communicated with work team*** according to workplace requirements.
		3.8	Tools and equipment are placed in safe locations when not in immediate use.
4	Clean up.	4.1	Work area is cleared and materials are sorted for reuse or recycling and removed, and waste is disposed of using safe manual handling techniques and according to workplace procedures, regulations, codes of practice, and job specifications
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to:
  - evaluate own actions and make judgements about performance and necessary improvements
  - recognise signs indicating undiscovered hazards on a demolition site, for example presence of termites
  - respond to change, such as differences in current work site environmental and sustainability requirements
- numeracy skills to:
  - check levels of lubricants in equipment
  - perform measurements and calculations associated with work, such as when determining specified length of wall to be removed
- oral communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - report hazards on the work site, including faults in tools, equipment and materials
  - use language and concepts appropriate to cultural differences
- reading skills to:
  - interpret documentation, including drawings and specifications
  - understand written instructions, procedures and signage
- writing skills to complete pre-operational checklists and simple equipment fault forms

Required knowledge

- general construction terminology
- hazards that may exist or arise on demolition sites, including those associated with the use of demolition tools and equipment
- procedures for:
  - environmentally friendly waste management
  - managing risks and hazards on demolition sites
  - sorting and storing reusable and recyclable materials
- types of information required to plan and prepare for safe and effective completion of demolition tasks
- types of portable power tools, hand tools and equipment applicable to demolition tasks, including:

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- applications of each tool or piece of equipment
- maintenance requirements
- safe methods of operation for different demolition tasks

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace by observation of the selection and use of hand tools and equipment and completion of on-site demolition tasks as part of a team.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- complete five on-site demolition tasks safely and effectively, using appropriate combinations of tools and equipment, to perform at least one of each of the following tasks:
  - knocking down structures
  - loading out rubbish
  - pulling apart equipment
  - removing fixtures and fittings
- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and requirements of WHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- communicate and work effectively and safely with others
- follow work instructions, operating procedures and inspection practices to safely and effectively use demolition tools and equipment for their appropriate application, ensuring:
  - there is no damage to tools or equipment
  - work is completed to specification
  - compliance with regulations, standards and organisational quality procedures and processes.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- must meet relevant compliance requirements.

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Resource implications for assessment include:

- an induction procedure
- realistic tasks covering the mandatory task requirements
- relevant specifications and work instructions
- hand tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- information relevant to each task, such as safety data sheets.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the following methods:

- direct observation of tasks in real work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information may include:

- advice and guidelines relating to regulatory and legislative requirements for using demolition tools and equipment
- current Australian standards relating to using demolition hand

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tools and equipment
- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- job safety analyses (JSA)
- memos
- plans, drawings and specifications
- procedures relating to the use of demolition tools and equipment
- quality requirements
- safe work method statements (SWMS)
- safety data sheets (SDS)
- signage
- verbal, written and graphical instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Work health and safety requirements must comply with state or territory legislation and regulations and demolition project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures
- manual handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
- hazard control
- identification of hazardous materials and substances and relevant safe handling or quarantining procedures for each, including:
  - animal residue
  - asbestos
  - dust
  - lead
  - lead-based paints
  - pesticide residue
- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- use of safe operating procedures, including operational risk assessment and treatments associated with:
  - equipment tagging
  - fall protection
  - identification and preparation of access and egress points
  - identification of equipment guarding and cut-off switches
  - lighting

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- power cables, including overhead service trays, cables and conduits
- restricted access barriers
- surrounding structures
- traffic control
- trip hazards
- work site visitors and the public
- working at heights
- working in confined spaces
- working in proximity to others.

Environmental requirements may include:

- management of:
  - clean-up
  - dust
  - energy use
  - noise
  - vibration
  - waste
  - water use
- sedimentation control
- stormwater quality.

Hand tools and equipment may include:

- hand tools, such as:
  - bars:
    - crow
    - pinch
  - bolt cutters
  - hacksaws
  - hammers
  - handsaws
  - jack hammers, electric and pneumatic
  - picks and mattocks
  - pliers
  - power drills and saws
  - shovels and spades
  - sledge hammers
  - spanners
  - wrenches
- equipment, such as:
  - brooms
  - exhaust fans
  - pallet trolleys

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- safety equipment, including:
  - barricades
  - fall prevention
  - PPE
  - scaffolds
  - signs
- props, such as:
  - acrows
  - trishores
- vacuums
- wheelbarrows.

Hazards associated with individual demolition tasks may include:

- hazards identified in project demolition plan
- unpredicted hazards uncovered as a result of prior work completed on site, such as:
  - buried asbestos waste
  - fire damage
  - termite damage
  - undocumented new or relocated services, including electrical wiring.

Demolition tasks:

- must include:
  - knocking down structures
  - loading out rubbish
  - dismantling equipment
  - removing fixtures and fittings
- may be performed:
  - at ground level
  - at heights
  - in confined spaces
  - on new construction sites
  - on existing structures being removed, renovated or extended, which involves the complete or partial removal of components
  - over water
  - under water
  - underground.

Pre-operational checks may include:

- hydraulic fluid
- levels of lubricants
- water.

Communication with work team may include:

- non-verbal communication, including immediate stop work flags or notices in the case of uncovered hazards that must be

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re-assessed
- verbal communication
- use of technological equipment.

Unit Sector(s)

Demolition

Custom Content Section

Not applicable.

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CPCCDE3018A Select and use small plant and equipment for demolition tasks

Modification History

New unit.
This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

Unit Descriptor

This unit of competency specifies the outcomes required to select and use small plant and equipment safely and effectively to complete individual demolition tasks, such as breaking concrete, stripping out interior of buildings, pulling down walls and separating waste for recycling.

Application of the Unit

This unit of competency supports demolition workers who perform demolition tasks, such as removing fixtures and fittings, ceilings, walls, floors and floor support systems of all types of buildings, using small plant and equipment.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to demolition work in different States and Territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions are obtained using relevant ***information***, confirmed with colleagues or supervisor, and applied to planning and preparation.
		1.2	***Work health and safety (WHS) requirements*** are identified and applied to task planning according to safety plans and policies and work site requirements.
		1.3	***Environmental requirements*** are identified and applied according to environmental plans and regulatory obligations.
2	Identify and check small plant and equipment.	2.1	***Small plant and equipment*** to be used in the demolition process are identified and checked for serviceability, and faults are rectified and reported.
		2.2	Functions and methods of operation of demolition small plant and equipment are identified from specifications, standards and manufacturer instructions.
		2.3	Specific WHS requirements for the selected small plant and equipment are identified and applied.
3	Complete demolition tasks.	3.1	Confirmation is obtained from supervisor and regulatory authorities that existing services have been disconnected.
		3.2	Work site inspection is conducted and ***hazards associated with individual demolition tasks*** are assessed immediately prior to commencing work according to workplace procedures.

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		3.3	Safe demolition work method is amended if required and confirmed with colleagues or supervisor.
		3.4	***Work area is prepared*** for the use of demolition small plant and equipment.
		3.5	Small plant and equipment that meet the requirements of the ***demolition task*** are selected.
		3.6	***Pre-operational checks*** are completed according to manufacturer recommendations.
		3.7	Small plant and equipment are used for their intended purpose in demolition tasks according to regulations, standards, codes of practice and workplace requirements.
		3.8	Work progress and hazards or issues arising during work tasks are ***communicated with work team*** according to workplace requirements.
		3.9	Small plant and equipment are placed in safe locations when not in immediate use.
4	Clean up.	4.1	Work area is cleared and materials are sorted for reuse or recycling and removed, and waste is disposed of using safe manual handling techniques and according to workplace procedures, regulations, codes of practice and job specifications.
		4.2	Small plant and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to:
  - recognise signs indicating undiscovered hazards on a demolition site, for example presence of termites
  - respond to change, such as differences in current work site environmental and sustainability requirements
- numeracy skills to:
  - check levels of lubricants in equipment
  - perform measurements and calculations associated with work, such as when determining specified length of wall to be removed
- oral communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - report hazards on the work site to appropriate personnel, including faults in small plant, equipment or materials
  - use language and concepts appropriate to cultural differences
- reading skills to:
  - interpret documentation, including drawings and specifications
  - understand written instructions, procedures and signage
- writing skills to complete pre-operational checklists and simple equipment fault forms

Required knowledge

- general construction terminology
- hazards that may exist or arise on demolition sites, including those associated with the use of demolition small plant and equipment
- procedures for:
  - environmentally friendly waste management
  - managing risks and hazards on demolition sites
  - sorting and storing reusable and recyclable materials
- types of information required to plan and prepare for safe and effective completion of demolition tasks
- types of small plant and equipment applicable to demolition tasks, including:
  - applications of each type of small plant or piece of equipment
  - maintenance requirements

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- safe methods of operation for different demolition tasks

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace by observation of the selection and use of small plant and equipment, and completion of on-site demolition tasks as part of a team.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- complete five different types of on-site demolition tasks safely and effectively, using appropriate combinations of small plant and equipment, to perform at least one of each of the following tasks:
  - breaking concrete
  - dismantling warehouse purlins and wall or roof sheeting
  - loading trucks
  - pulling down walls
  - removing wall and floor toppings
  - separating waste for recycling
  - stripping out interiors of buildings
- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and requirements of WHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- communicate and work effectively and safely with others
- follow work instructions, operating procedures and inspection practices to safely and effectively use demolition tools and equipment for their appropriate application, ensuring:
  - there is no damage to small plant or equipment
  - work is completed to specification
  - compliance with regulations, standards and organisational quality procedures and processes.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure
- realistic tasks covering the mandatory task requirements

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- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- information relevant to each task, such as safety data sheets.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the following methods:

- direct observation of tasks in real work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information may include:

- advice and guidelines relating to regulatory and legislative requirements for using demolition tools and equipment
- current Australian standards relating to using small plant and equipment for demolition tasks
- diagrams or sketches
- instructions issued by authorised organisational or external personnel

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- job safety analyses (JSA)
- memos
- plans, drawings and specifications
- procedures relating to the use of demolition plant and equipment
- quality requirements relating to the use of demolition tools and equipment
- safe work method statements (SWMS)
- safety data sheets (SDS)
- signage
- verbal, written and graphical instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Work health and safety requirements must comply with state or territory legislation and regulations and demolition project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures
- manual handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
- hazard control
- identification of hazardous materials and substances and relevant safe handling or quarantining procedures for each, including:
  - animal residue
  - asbestos
  - dust
  - lead
  - lead-based paints
  - pesticide residue
- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- use of safe operating procedures, including operational risk assessment and treatments associated with:
  - equipment tagging
  - fall protection
  - identification and preparation of access and egress points
  - identification of equipment guarding and cut-off switches
  - lighting
  - power cables, including overhead service trays, cables and conduits
  - restricted access barriers

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- surrounding structures
- traffic control
- trip hazards
- work site visitors and the public
- working at heights
- working in confined spaces
- working in proximity to others.

Environmental requirements may include:

- management of:
  - clean-up
  - dust
  - energy use
  - noise
  - vibration
  - waste
  - water use
- sedimentation control
- stormwater quality.

Small plant and equipment may include:

- small plant, such as:
  - air compressors
  - elevated work platforms (EWPs)
  - forklifts
  - generators
  - jackhammers
  - material and personnel hoists
  - mini-loaders
  - pumps
  - rubber-tyred loaders
- equipment, such as:
  - brooms
  - safety equipment, including:
    - barricades
    - fall prevention
    - PPE
    - scaffolds
    - signs
  - pallet trolleys
  - wheelbarrows.

Hazards associated with individual demolition

- hazards identified in project demolition plan
- unpredicted hazards uncovered as a result of prior work completed on site, such as:

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tasks may include:

- buried asbestos waste
- fire damage
- termite damage
- undocumented new or relocated services, including electrical wiring.

Preparation of work areas may include:

- communicating with those who may be affected by the demolition task
- erecting scaffolding and dust protection
- identifying positions of hoses and cables clear of hazards
- installing supports and bracing
- location of signage and barricades
- provision for site safety.

Demolition tasks:

- must include:
  - breaking concrete
  - dismantling warehouse purlins and wall or roof sheeting
  - loading trucks
  - pulling down walls
  - removing wall and floor toppings
  - separating waste for recycling
  - stripping out interiors of buildings
- may be performed:
  - at ground level
  - at heights
  - in confined spaces
  - on new construction sites
  - on existing structures being removed, renovated or extended, which involves the complete or partial removal of components
  - over water
  - under water
  - underground.

Pre-operational checks may include:

- hydraulic fluid
- levels of lubricants
- water.

Communication with work team may include:

- non-verbal communication, including immediate stop work flags or notices in the case of uncovered hazards that must be re-assessed
- verbal communication
- use of technological equipment.

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Unit Sector(s)

Demolition

Custom Content Section

Not applicable.

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CPCCDE3019A Demolish small buildings and structures using hand tools and small plant and equipment

Modification History

New unit.
This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

Unit Descriptor

This unit of competency specifies the outcomes required to select and use hand tools, small plant and equipment safely and effectively to demolish small buildings and structures.
Manual demolition processes include dismantling or demolishing and removing materials and component parts of a building or structure using only hand tools, small plant and equipment.

Application of the Unit

This unit of competency supports demolition workers who remove fixtures and fittings, roofs, trusses, ceilings, external and internal walls, floors and floor support systems of small buildings and structures and sort materials for reuse and recycling.
Small buildings and structures include two-storey houses, small shops, factories, workshops and warehouses.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to demolition work in different States and Territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions are obtained using relevant ***information***, confirmed and applied to planning and preparation.
		1.2	***Work health and safety (WHS) requirements*** are identified and applied to task planning according to safety plans and policies.
		1.3	***Hand tools, small plant and equipment*** are selected to carry out tasks consistent with job requirements, checked for serviceability, and faults are rectified and reported before work begins.
		1.4	***Environmental requirements*** are identified for the project according to environmental plans and regulatory obligations.
2	Prepare demolition site.	2.1	***Demolition tasks*** are confirmed and requirements of site demolition plan determined according to workplace procedures.
		2.2	***Site inspection*** is conducted to determine condition of work site and surrounds before work begins.
		2.3	Confirmation is obtained from supervisor and regulatory authorities that relevant ***services*** have been disconnected and services that will remain live on the demolition site are identified.
		2.4	Hazardous material is identified for separate handling according to workplace requirements and instructions.

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		2.5	Requirements for safe work at heights including fall protection devices are installed according to workplace requirements.
		2.6	Small plant and equipment are positioned in operating locations, and appropriate exclusion zone and traffic control are arranged.
		2.7	Site is protected and secured according to compliance requirements and unauthorised access is prevented.
3	Dismantle or demolish building components.	3.1	***Building components*** are dismantled or demolished and removed in a directed sequence according to site demolition plan and safe work method statements
		3.2	Selected types of small plant are operated according to manufacturer specifications, standards and workplace procedures to carry out demolition of building components.
		3.3	***Communication*** is maintained with team members, during the demolition process.
		3.4	Work site conditions and progress are monitored in consultation with team members and work is stopped or techniques adjusted as required, according to workplace requirements.
4	Sort and store demolition materials and waste.	4.1	Removed components are relocated to storage or disposal area according to workplace requirements.
		4.2	Materials and building component parts are safely and effectively handled using selected material handling techniques.
		4.3	Materials and components identified for salvaging are handled, stored and stacked ready for transport according to standard material handling practices and workplace procedures.
		4.4	Removed components are relocated to storage or disposal area according to workplace requirements.

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5	Clean up.	5.1	Work area is cleared and materials disposed of, reused or recycled according to workplace requirements, regulations, codes of practice and job specification.
		5.2	Plant, tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to:
  - recognise signs indicating undiscovered hazards on a demolition site, for example termite activity
  - respond to change, such as differences in current work site environmental and sustainability requirements
- numeracy skills to:
  - check levels of lubricants in equipment
  - estimate weights of volumes of demolition debris and recyclable materials
  - perform measurements and calculations associated with work, such as when determining specified length of wall to be removed
- oral communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - report hazards on the work site, including faults in tools, equipment and materials
  - use language and concepts appropriate to cultural differences
- reading skills to:
  - interpret documentation relating to work requirements, including:
    - drawings and specifications
    - job safety analyses (JSA)
    - safe work method statements (SWMS)
    - safety data sheets (SDS)
  - understand written instructions, procedures and signage
- writing skills to complete pre-operational checklists and equipment fault forms

Required knowledge

- general construction terminology
- hazards associated with demolition tasks
- demolition processes and techniques for small structures
- procedures for material storage and environmentally friendly waste management
- types of small plant, tools and equipment used in the demolition of small buildings, including:
  - applications
  - characteristics

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  - limitations
  - maintenance requirements
  - methods of operation
- quality requirements relating to the demolition of small structures
- workplace and equipment safety requirements that apply to the demolition of small buildings and structures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by observing the demolition of a small building or structure, using hand tools, small plant and equipment.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- as a minimum, given a site demolition plan and instructions, remove fixtures and fittings, a pitched metal/tiled roof, trusses, ceiling, external and internal walls, floor and floor support system of a two-storey house; and clean up, disposing or salvaging materials, ensuring:
  - correct identification of job requirements and conduct of the demolition process
  - correct selection and use of appropriate processes, tools and equipment
  - completion of work to specification
  - safe and effective operation and use of tools, plant and equipment
  - communication and safe work with others
  - compliance with regulations, standards and organisational quality procedures and processes, including:
    - location, interpretation and application of relevant information, standards and specifications
    - compliance with site safety plan and WHS legislation, regulations and codes of practice applicable to workplace operations
    - compliance with organisational policies and procedures, including quality requirements.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure
- realistic tasks covering the mandatory task requirements
- relevant specifications and work instructions
- small plant, tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity

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- workplace instructions relating to safe work practices and addressing hazards and emergencies
- research resources, including industry-related systems information
- safety data sheets (SDS).

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, a combination of the following methods:

- direct observation of tasks
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance**. *Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information may include:

- advice and guidelines relating to regulatory and legislative requirements for manual demolition processes, including statutory permits
- current Australian standards relating to demolishing small buildings and structures
- diagrams or sketches, including identification of load bearing and non-load bearing elements
- instructions issued by authorised organisational or external personnel

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- memos
- safe work procedures relating to manual demolition processes, including identification of suspended elements that may require propping
- safety data sheets
- site demolition plan, including provisions for minimising disruption to the public
- signage
- verbal, written and graphical instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Work health and safety requirements must comply with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures
- handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
- hazard control
- hazardous materials and substances, including asbestos, lead-based paints, dust, pesticide residue, animal residue and the safe handling or quarantining procedures for each
- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including operational risk assessment and treatments associated with:
  - lighting
  - power cables, including overhead service trays, cables and conduits
  - restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
- use of firefighting equipment
- use of appropriate hot work methods and procedures
- use of tools and equipment
- workplace environmental requirements and safety.

Hand tools, small plant and equipment may

- hand tools, such as:
  - bars:

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include:

- crow
- pinch
- bolt cutters
- hacksaws
- hammers
- handsaws
- picks and mattocks
- pliers
- power drills and saws
- shovels and spades
- sledge hammers
- spanners
- wrenches
- small plant, such as:
  - compressors
  - elevated work platforms (EWPs)
  - generators
  - jackhammers
  - material and personnel hoists
  - mini-loaders
  - mulchers
  - pedestrian trenchers
  - pumps
- equipment, such as:
  - brooms
  - safety equipment, including:
    - barricades
    - fall prevention
    - PPE
    - scaffolds
    - signs
  - pallet trolleys
  - wheelbarrows.

Environmental requirements may include:

- clean-up management
- dust and noise control
- sedimentation control
- vibration management
- waste management.

Demolition tasks may be

- at ground level
- at height

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performed:

- in a confined space with relevant permits and controls in place
- on a new construction site or an existing structure being renovated or extended, which involves the complete or partial removal of components
- over water
- under water
- underground.

Site inspection may include:

- assessing condition of property and surrounds
- checking:
  - erection of scaffolding
  - installation of supports and bracing
  - location of signage and barricades
  - provision of site amenities
  - site safety management plan
- communicating with those who may be affected by demolition task
- identifying hazardous materials
- identifying positions of hoses and cables clear of hazards.

Services:

- must include:
  - air
  - chemical product (fuel)
  - computer and communication
  - electricity
  - electrical distribution assets
  - gas
  - hydraulic
  - services specific to manufacturing processes
  - steam
  - telecommunications
  - wastewater
  - water
- may be:
  - overhead
  - underground
  - disconnected
  - live:
    - services adjacent to demolition site
    - services required during demolition process
  - located within structural elements
  - temporary

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- undocumented:
  - extensions
  - relocations.

Building components may include:

- concrete and masonry areas:
  - edge strips
  - pads
  - paths
  - retaining walls and fences
  - slabs
- external sections of buildings:
  - attached structures, carports and sheds
  - non-load bearing walls
  - patios and decks
  - fixtures and fittings
- internal sections of buildings:
  - built-in components
  - ceilings
  - cladding
  - flooring
  - load bearing and non-load bearing partition walling
  - wet area components.

Communication may include the use of:

- hand signals
- mobile equipment
- radios.

Unit Sector(s)

Demolition

Custom Content Section

Not applicable.

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CPCCDE3020A Select and use tools and equipment for hot work in the demolition industry

Modification History

New unit.
This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

Unit Descriptor

This unit of competency specifies the outcomes required to cut materials using cutting processes that create a heat source that could cause an ignition. The unit covers the safe operation and maintenance of tools and equipment for hazardous demolition hot work.

Application of the Unit

This unit of competency supports demolition workers who perform demolition tasks, such as cutting concrete, steel and timber.

Licensing/Regulatory Information

Hot work permits and licences for the operation of specialised hot-work equipment are required in different States and Territories.
In addition, licensing, legislative, regulatory or certification requirements apply to demolition work in different States and Territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions are obtained using relevant ***information***, confirmed with colleagues or supervisor, and applied to planning and preparation.
		1.2	**Site *work health and safety (WHS) requirements*** are identified and applied to task planning according to safety plans and policies and work site requirements.
		1.3	Work site inspection is conducted and ***hazards associated with individual demolition hot work tasks*** are assessed immediately prior to commencing work according to workplace procedures.
		1.4	***Environmental requirements*** are identified and applied according to environmental plans and regulatory obligations.
		1.5	Permits for hot work and licences for specialised equipment are obtained or checked before starting work.
2	Select tools and equipment and prepare for use.	2.1	***Tools and equipment*** are selected for different ***hot work tasks*** according to manufacturer recommendations and workplace requirements.
		2.2	Pre-operational checks and maintenance requirements are completed according to manufacturer recommendations, and faults are rectified and reported.
		2.3	Safe methods of operation of tools and equipment for hot work are identified from manufacturer instructions and workplace requirements.

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		2.4	Specific WHS requirements for the selected tools and equipment for hot work are identified and applied.
3	Complete cutting, grinding and hot work.	3.1	Confirmation is obtained from supervisor and regulatory authorities that existing services have been disconnected.
		3.2	Safe demolition work method statement is amended if required and confirmed with colleagues or supervisor.
		3.3	***Work area is prepared*** for hot work according to site safety and workplace requirements.
		3.4	Tools and equipment are used for their intended purpose in hot work demolition tasks according to regulations, standards, codes of practice and workplace requirements.
		3.5	Work progress and hazards or issues arising during work tasks are ***communicated with work team*** according to workplace requirements.
		3.6	Tools and equipment are placed in safe locations when not in immediate use.
4	Clean up.	4.1	Work area is cleared and materials are sorted for reuse or recycling, and removed or waste disposed of, using safe manual handling techniques and according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to:
  - recognise signs indicating undiscovered hazards on a demolition site, for example presence of residual fuel
  - respond to change, such as differences in current work site environmental and sustainability requirements
- numeracy skills to:
  - check levels of lubricants in tools
  - perform measurements and calculations associated with work, such as when determining specified length of wall to be removed
- oral communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - report hazards on the work site, including faults in tools and equipment or materials
  - use language and concepts appropriate to cultural differences
- reading skills to:
  - interpret documentation, including drawings and specifications
  - understand written instructions, procedures and signage
- writing skills to complete pre-operational checklists and simple equipment fault forms

Required knowledge

- general construction terminology
- hazards that may exist or arise on demolition sites, especially those associated with hot work, such as:
  - build-up of combustible materials
  - chemical compounds
  - drums
  - dust
  - gas
  - residual fuels, for example in pipework to be cut
  - sparks
  - storage tanks
- procedures for:

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  - environmentally sound waste management
  - managing risks and hazards on demolition sites
  - sorting and storing reusable and recyclable materials
- types of information required to plan and prepare for safe and effective completion of demolition tasks
- types of tools and equipment used for cutting, grinding and hot work in the demolition industry, including:
  - applications of each type of tool or piece of equipment
  - maintenance requirements
  - safe methods of operation for different cutting, grinding or hot work tasks

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace by observation of the selection and use of hot work tools and equipment, and completion of on-site demolition tasks as part of a team.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- set up and use cutting equipment, such as oxy-fuel gas cutting equipment, to cut through a metal structural element
- set and use a demolition saw to cut through a structural element
- use an LEL unit to identify lower explosive level at two sites
- locate, interpret and apply relevant information, standards and specifications relating to hot work
- comply with site safety plan and requirements of WHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- communicate and work effectively and safely with others
- follow work instructions, operating procedures and inspection practices to safely and effectively use demolition hot work tools and equipment for their appropriate application, ensuring:
  - there is no damage to tools and equipment
  - work is completed to specification
  - compliance with regulations, standards and organisational quality procedures and processes.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure
- realistic tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment as listed appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and

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addressing hazards and emergencies
- information relevant to each task, such as safety data sheets.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the following methods:

- direct observation of tasks in real work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance**. *Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information may include:

- advice and guidelines relating to regulatory and legislative requirements for using demolition tools and equipment
- current Australian standards relating to hot work in the demolition industry
- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- job safety analyses (JSA)
- manufacturer specifications and instructions, where specified including advice for the:
  - safe handling of cylinders

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- safe maintenance of equipment
- safe use of oxy/fuel gas cutting equipment
- memos
- plans, drawings and specifications
- and procedures relating to the use of demolition hot work tools and equipment
- quality requirements
- safe work method statements (SWMS)
- safety data sheets (SDS)
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Work health and safety requirements must comply with state or territory legislation and regulations and demolition project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures
- fire watch during hot work procedures, including post-activity fire watch
- handling of pressurised cylinders
- hazard identification and control, for such things as presence of residual fuels, and selection of alternative methods to hot work
- hot work permits
- manual handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- selection and use of monitoring equipment, such as lower explosive level (LEL) meter
- use of safe operating procedures, including operational risk assessment and treatments associated with:
  - cutting, grinding and hot work
  - equipment tagging
  - fall protection
  - identification and preparation of access and egress points
  - identification of equipment guarding and cut-off switches
  - lighting
  - power cables, including overhead service trays, cables and conduits
  - restricted access barriers
  - surrounding structures

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- traffic control
- trip hazards
- work site visitors and the public
- working at heights
- working in confined spaces
- working in proximity to others.

Hazards associated with individual demolition hot work tasks may include:

- hazards identified in project demolition plan
- unpredicted hazards uncovered as a result of prior work completed on site, such as:
  - chemical waste
  - lead coating
  - underground fuel tanks.

Environmental requirements may include:

- management of:
  - clean-up
  - dust
  - energy use
  - noise
  - vibration
  - waste
  - water use
- sedimentation control
- stormwater quality.

Tools and equipment must include:

- arc gouging equipment
- angle grinders
- demolition saws:
  - concrete
  - steel
- chain saws, including diamond chainsaws
- gas cutting equipment
- grinding discs
- oxy-fuel gas cutting equipment
- plasma cutting equipment
- quick cut saws
- thermal lancing equipment
- safety equipment, including:
  - barricades
  - fall prevention
  - PPE
  - scaffolds
  - signs

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	• tools and equipment: electric, hydraulic or pneumatic.
Hot work tasks may include:	• concrete cutting • oxy-cutting and removal of structural steel • oxy-cutting of reinforcement • saw cutting of timber-framed buildings • steel cutting.
Preparation of work areas may include:	• communicating with those who may be affected by the demolition task • erecting scaffolding and dust protection • identifying positions of hoses and cables clear of hazards • installing supports and bracing • location of signage and barricades • providing for site safety.
Communication with work team may include:	• non-verbal communication, including immediate stop work flags or notices in the case of uncovered hazards that must be re-assessed • verbal communication • use of technological equipment.

Unit Sector(s)

Demolition

Custom Content Section

Not applicable.

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CPCCDE3021A Operate demolition material crushing plants

Modification History

New unit, based on CPCCDE3013A.
This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.
Not equivalent unit CPCCDE3013A Operate a crushing plant.

Unit Descriptor

This unit of competency specifies the outcomes required to operate a stationary or mobile crushing plant to produce crushed demolition materials in a range of sizes. It includes the preparation, inspection, maintenance, operation and shut-down of a crushing plant. It may include working with others and as a member of a team.

Application of the Unit

This unit of competency supports those who operate a crushing plant in the demolition industry.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to demolition work in different States and Territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	***Compliance requirements*** relevant to crushing and screening plant operations are accessed and applied.
		1.2	***Work requirements*** are obtained using relevant ***information***, confirmed and applied to planning and preparation.
		1.3	***Work health and safety (WHS) requirements*** are followed according to safety plans and policies.
		1.4	***Plant and equipment*** are selected to carry out tasks that are consistent with job requirements and checked for serviceability, and faults are rectified and reported before work begins.
		1.5	***Environmental requirements*** are identified for the project according to environmental plans and regulatory obligations.
		1.6	Crushing plant ***pre-start, start-up***, run and ***shut-down procedures*** are conducted to ensure correct operational condition according to manufacturer requirements, and faults are identified and corrected or reported to supervisor.
		1.7	***Work area and equipment are prepared*** and sequence of tasks is planned in coordination with ***relevant personnel***.

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2	Operate crushing plant.	2.1	***Operating technique*** is selected and modified to meet ***changing work conditions*** according to workplace and environmental requirements and manufacturer recommendations.
		2.2	Uncrushed ***materials*** are directed into hopper, and feed of uncrushed materials is maintained according to manufacturer instructions.
		2.3	Operations are monitored, conducted and controlled within the equipment limitations and while ***communicating*** with relevant personnel, to maintain crushing and screening efficiency and effectiveness.
		2.4	Crushing plant is stopped, cleared of blocked materials and restarted as required, according to manufacturer instructions and site safety plan.
		2.5	Crushing plant settings are maintained according to manufacturer instructions.
		2.6	Work is completed according to requirements and within the operating capacity of the allocated equipment.
3	Carry out post-operational procedures.	3.1	Plant and equipment are inspected and faults are reported according to workplace and manufacturer requirements.
		3.2	***Operational maintenance, servicing, lubricating and housekeeping tasks*** are conducted according to manufacturer requirements.
		3.3	Operational records and reports are maintained and processed according to workplace requirements.
		3.4	Crushing plant is shut down according to manufacturer instructions and site safety and operation plan.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to:
  - evaluate own actions and make judgements about performance and necessary improvements
  - respond to change, such as differences in current work site environmental and sustainability requirements
- numeracy skills to:
  - estimate weight of volumes of demolition debris
  - perform measurements and calculations associated with work, such as determining maximum load capacity of equipment
- oral communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - report hazards on the work site, including faults in equipment
  - use language and concepts appropriate to cultural differences
- reading skills to:
  - interpret documentation, including drawings
  - understand written instructions, procedures and signage, such as:
    - job safety analyses (JSA)
    - safe work method statements (SWMS)
    - safety data sheets (SDS)
- writing skills to complete pre-operational checklists and equipment fault forms

Required knowledge

- construction terminology
- procedures for material storage and environmentally friendly waste management
- quality requirements relating to products of crushing operations
- types, characteristics, uses and limitations of plant and equipment involved in the conduct of crushing operations, including:
  - hazards associated with the conduct of crushing operations
  - method of operation and maintenance requirements of crushing plant and equipment
  - techniques associated with the conduct of crushing operations
- workplace and equipment safety requirements that apply to the operation of a demolition material crushing plant

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by observation of the operation of a crushing plant in the workplace.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to crush a minimum of 100 tonnes of demolition material into two different nominal sizes of crushings, which may be 5mm, 10mm, 20mm or 40mm, including:

- communicating and working effectively and safely with others
- completing work to specification
- complying with site safety plan and requirements of:
  - organisational procedures and processes, including quality requirements
  - standards and codes of practice applicable to the operation of a demolition materials crushing plant
  - WHS legislation and regulations
- identifying work requirements
- safely and effectively operating plant, and using tools and equipment.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure
- realistic tasks covering the mandatory task requirements, including a crushing schedule and work instructions
- research resources, including industry-related systems information
- support materials appropriate to activity, including:
  - relevant manuals and specifications
  - safety data sheets
- tools and equipment appropriate to applying safe work practices
- workplace instructions relating to safe work practices and addressing hazards and emergencies.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the

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following methods:

- direct observation of tasks in real work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Compliance requirements relating to crushing and screening plant operations may include:

- manufacturer guidelines and specifications
- organisation and site requirements and procedures
- requirements of relevant legislation, codes and standards.

Work requirements may include:

- achievement targets
- coordination requirements and issues
- hazards and potential hazards
- lighting conditions
- nature and scope of tasks
- operational conditions
- plant configuration
- plant or equipment defects
- product details
- site layout and out of bounds areas

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Information may include:

- stockpile details
- work site inspection requirements.
- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- memos
- safe work procedures relating to the operation of crushing plant
- safety data sheets
- signage
- verbal, written and graphical instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Work health and safety requirements must comply with state and territory legislation and regulations and project safety plan and may include:

- dust suppression and extraction procedures
- emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures
- handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
- hazard control
- hazardous materials and substances
- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices, such as:
  - chemical and gas detectors
  - eye protection
  - hearing protection
  - protection from the elements
  - protective clothing
  - respiratory devices
  - safety harness when working at heights
- safe operating procedures, including operational risk assessment and treatments associated with:
  - falling objects
  - lighting
  - plant movement
  - power cables, including overhead service trays, cables and conduits
  - restricted access barriers
  - surrounding structures

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- traffic control
- trip hazards
- work site visitors and the public
- working at heights
- working in confined spaces
- working in proximity to others
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Plant and equipment may include:

- conveyor belts
- crusher plants
- excavators.

Environmental requirements may include:

- clean-up management
- dust suppression and extraction
- noise suppression
- sedimentation control
- ventilation of work area
- vibration control
- waste management.

Pre-start and start-up procedures may include:

- visual inspection tour of the plant
- checking and topping up fluid levels, including fuel
- lubrication and greasing
- inspecting attachments to ensure security and to identify defects
- checking instrument and control levers and reporting defects and damage
- following prescribed start-up sequence
- confirming plant is operational.

Shut-down procedures may include:

- emergency shut-down procedures
- end of work shut-down sequence
- securing equipment.

Preparation of work area and equipment may include:

- location of stockpile areas or bins
- positioning plant
- preparing and setting plant for initial size range of crushings
- safeguarding site and non-site personnel by:
  - erecting barricades and posting signs
  - identifying hazards
  - selecting and implementing control measures for the hazards identified
  - selecting appropriate equipment to ensure personnel safety and protection

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	• stabilising plant.
Relevant personnel may include:	• demolition team members • lead contractor • mobile plant operators • maintenance personnel • waste management team members.
Operating technique may include:	• crusher adjustment • feed control adjustment • working safely around other machines and personnel.
Changing work conditions may include:	• feed grading • feed contamination • weather conditions • day-time • night-time.
Materials may include:	• blocks • bricks • concrete • in situ demolition site materials • pavers • recycled materials • rocks • stone.
Communication may include:	• hand signals and other non-verbal communication • use of communications technology, such as radios and mobile phones.
Operational maintenance, servicing, lubricating and housekeeping tasks may include:	• changing worn components • cleaning • adjusting equipment • greasing • scheduled servicing.

Unit Sector(s)

Demolition

Custom Content Section

Not applicable.

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CPCCDE3022A Manage demolition recyclable and waste materials using load shifting equipment

Modification History

New unit.
This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

Unit Descriptor

This unit of competency specifies the outcomes required to organise the removal of different types of demolition recyclable and waste materials, including hazardous materials. It involves the operation of a range of load shifting equipment on demolition sites and incorporates knowledge of recyclable materials and the safe disposal of hazardous materials.

Application of the Unit

This unit of competency supports the role of demolition workers who manage and move recyclable and waste materials resulting from demolition work.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to demolition work in different States and Territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions are obtained using relevant ***information***, confirmed and applied to planning and preparation.
		1.2	***Work health and safety (WHS) requirements*** are identified and applied to task planning according to safety plans and policies.
		1.3	***Load shifting equipment***, associated attachments and ***emergency and personal protective equipment*** (PPE) are selected according to job requirements to maximise efficiency and effectiveness of transportation.
		1.4	Licence to operate specific plant is presented to relevant personnel for compliance inspection.
		1.5	***Potential hazards and risks*** are identified and dealt with according to workplace ***emergency response procedures*** and legislative requirements.
		1.6	Environmental requirements are identified and applied to work planning according to work site environmental plans, workplace requirements and regulatory obligations.
2	Perform routine checks on load shifting and other equipment.	2.1	Load shifting equipment is inspected and ***faults*** are dealt with or reported as required.
		2.2	Load shifting equipment systems are tested to ensure compliance with manufacturer specifications and organisational requirements.

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		2.3	***Service checks*** are conducted in compliance with manufacturer specifications.
		2.4	Emergency and personal protective equipment is checked to ensure it is serviceable.
		2.5	Associated equipment is checked to ensure that it is operational and complies with manufacturer specifications.
3	Organise materials and equipment for loading.	3.1	Work site procedures for segregating and locating ***recyclable and waste demolition materials*** are confirmed with relevant personnel.
		3.2	Recyclable materials to be loaded are identified and checked to ensure integrity of on-site sorting, as required.
		3.3	Waste materials to be loaded are identified and checked to ensure ***integrity of containment***, as required.
		3.4	***Loading procedures*** are determined according to material or waste type and organisational and environmental requirements.
		3.5	Load shifting equipment is parked or set up in a loading position that ensures efficiency and safety of loading.
		3.6	Barriers and warning signs are erected at loading sites to ensure safety of surrounding personnel according to organisational requirements and requirements of relevant legislation.
4	Load and move materials.	4.1	Materials are loaded safely and efficiently according to type and using an approved loading method to maintain integrity.
		4.2	Visual checks of load and surrounding environment are maintained to identify and avoid, minimise or remedy potential hazards.
		4.3	Clear ***communication*** with relevant personnel is maintained.
		4.4	Load is checked to ensure it conforms to equipment capacity requirements, manufacturer specifications, and

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			requirements of relevant legislation and codes.
		4.5	Equipment is operated and driven in a safe and efficient manner, according to organisational requirements, road and traffic regulations, and requirements of other legislation and codes.
		4.6	Materials are moved safely and securely according to organisational requirements, manufacturer specifications, and requirements of relevant legislation and codes.
5	Unload and store materials.	5.1	Materials are unloaded safely and efficiently in designated area according to type and using an approved unloading method to maintain integrity.
		5.2	Visual checks are maintained to identify and remedy potential hazards during unloading.
		5.3	Load is stacked or housed at destination according to organisational requirements, manufacturer specifications, and requirements of relevant legislation and codes.
6	Shut down and secure load shifting equipment.	6.1	Equipment is parked or stored in a safe location to avoid damage to equipment or obstruction of surrounding site activity.
		6.2	Shut-down procedures are completed according to manufacturer specifications and organisational requirements.
		6.3	Equipment is secured and stored in a manner that prevents unauthorised access or use.
7	Carry out basic housekeeping and maintenance	7.1	***Equipment is cleaned*** to remove debris and contamination and to ensure safe operating procedures.
		7.2	***Service checks*** are conducted according to manufacturer specifications.
		7.3	Equipment faults and defects are reported to relevant personnel.
		7.4	Record of moving activities is completed promptly and

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according to organisational requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to:
  - evaluate own actions and make judgements about performance and necessary improvements
  - respond to change, such as differences in current work site environmental and sustainability requirements
- numeracy skills to:
  - estimate the weight of volumes of demolition debris
  - perform measurements and calculations associated with work, such as determining maximum load capacity of equipment
- oral communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - report hazards on the work site, including faults in equipment
  - use language and concepts appropriate to cultural differences
- reading skills to:
  - interpret documentation, including route maps
  - understand written instructions, procedures and signage
- writing skills to complete pre-operational checklists and equipment fault forms

Required knowledge

- compliance requirements for handling and transporting materials, which include dangerous goods and hazardous substances
- driving procedures for different types of load shifting equipment, including:
  - licence requirements
  - map reading
  - road laws
- hazards and risks associated with handling and transporting materials and management strategies, including:
  - emergency response procedures
  - hierarchy of control
- manual and mechanical loading and unloading methods
- types of loading equipment, including equipment load weight requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by observation of practical demonstration in the workplace using load shifting equipment.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- manage and move a range of demolition recyclable and waste materials in two different contexts, using relevant combinations of the following types of equipment:
  - dozers
  - earthmoving equipment
  - forklifts
  - loaders:
    - front-end
    - rear-end
    - tailgate
  - trucks:
    - articulated trucks
    - open-bodied, including hook lift, pump, and vacuum
    - rigid
  - windrow turners
- locate, interpret and apply relevant information, standards and specifications relating to the management of demolition recyclable and waste materials
- comply with site safety plan and requirements of WHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- communicate and work effectively and safely with others
- follow work instructions, operating procedures and inspection practices to safely and effectively use the load shifting equipment listed above for their appropriate application, ensuring:
  - there is no damage to tools or equipment or injury to persons
  - all work is completed to specification
- compliance with regulations, standards and organisational quality procedures and processes.

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Context of and specific resources for assessment	Assessment of this unit: • must be in the context of the work environment • must meet relevant compliance requirements. Resource implications for assessment include: • an induction procedure • realistic tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment as listed appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • information relevant to each task, such as safety data sheets, work plans and approved specifications, forms and procedures manuals.
Method of assessment	Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the following methods: • direct observation of tasks • questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.
Guidance information for assessment	This unit could be assessed on its own or in combination with other units relevant to the job function. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support. Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present

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with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information may include:

- advice and guidelines relating to regulatory and legislative requirements, including:
  - Australian Code for the Transport of Dangerous Goods by Road and Rail
  - commonwealth, state and territory legislation, including:
    - environmental protection
    - trade practices
    - road laws
- current Australian standards relating to managing and moving demolition materials
- instructions issued by authorised organisational or external personnel
- job routes and sequences
- materials and waste types, classifications, characteristics and transport requirements
- quality requirements relating to the management of demolition recyclable and waste materials
- safe work method statements and procedures for managing and moving demolition materials and waste
- safety data sheets
- signage
- site contact
- site requirements
- vehicle and associated equipment requirements
- work schedules, plans and specifications.

Work health and safety requirements must comply with state or territory legislation and regulations and demolition project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures
- manual handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
- hazard control
- identification of hazardous materials and substances and relevant safe handling or quarantining procedures for each, including:
  - animal residue
  - asbestos
  - dust
  - lead
  - lead-based paints

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- pesticide residue
- use of safe operating procedures, including operational risk assessment and treatments associated with:
  - equipment tagging
  - fall protection
  - identification and preparation of access and egress points
  - identification of equipment guarding and cut-off switches
  - lighting
  - power cables, including overhead service trays, cables and conduits
  - restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others.

Load shifting equipment may include:

- dozers
- earthmoving equipment
- forklifts
- loaders:
  - front-end
  - rear-end
  - tailgate
- trucks, including:
  - articulated
  - open-bodied, including:
    - hook lift
    - pump
    - vacuum
  - rigid
- windrow turners.

Emergency and personal protective equipment:

- must include:
  - communications equipment
  - eye protection, such as goggles and protective glasses
  - eyewash kit
  - fire extinguishers
  - first aid kit
  - footwear

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- gloves
- overalls and protective clothing
- may include:
  - breathing apparatus
  - emergency procedure guides
  - face shields or masks
  - hard hats
  - hearing protection
  - safety data sheets
  - spill kit
- personal protective equipment must be:
  - cleaned and fitted according to organisational requirements, manufacturer specifications and WHS requirements
  - worn when required according to organisational requirements
  - stored according to organisational requirements.

Potential hazards and risks:

- may include:
  - broken glass
  - broken metal
  - compaction equipment
  - contamination
  - dust
  - fire
  - gases and fumes
  - hazardous waste
  - narrow driveways
  - other vehicles and equipment
  - overhanging signs
  - projectiles
  - spark-producing equipment
  - unguarded conveyor belts
  - weather
- may cause:
  - damage to plant, vehicle or property
  - harm to the environment
  - illness or injury to employees, contractors or the public
  - injuries resulting from manual handling and repetitive work.

Emergency response

- cleaning up

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procedures may include:

- containing emergency
- isolating or shutting down equipment or plant
- evacuation
- first aid
- making site safe
- notifying authorities
- using PPE.

Faults in load shifting equipment may include:

- component wear or damage
- leaks
- obstructions.

Service checks may include:

- ensuring that the following are maintained at designated levels:
  - air pressure
  - fuel
  - greasing
  - oil
  - water.

Recyclable and waste demolition materials may include:

- recyclable materials, such as:
  - bricks
  - concrete
  - copper wiring
  - glass
  - masonry
  - metal
  - polyvinyl chloride (PVC) pipe
  - timber
- waste materials, including:
  - hazardous:
    - medical and clinical
    - prescribed
    - quarantined
    - regulated
  - non-hazardous solid and liquid waste.

Integrity of containment may include checks for:

- contamination
- drum expansion
- gases
- leaching
- leaks
- seals
- spillage

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	• unstable form.
Loading procedures may involve:	• cart lifter • forklift • front-end loader • high pressure vacuum loading • loading by hand • shovelling.

Communication may include:	• non-verbal communication, such as:
	  • flagging
	  • hand signals
	  • SMS
	• verbal communication, which may be conducted using:
	  • radio
	  • telephone.

Cleaning of equipment may include:	• high pressure water or air-hosing • shovelling • sweeping out • using cleaning and decontamination products • vacuuming.

Unit Sector(s)

Demolition

Custom Content Section

Not applicable.

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CPCCDE3023A Operate skid steer loaders at ground level on demolition sites

Modification History

New unit.
This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

Unit Descriptor

This unit of competency specifies the outcomes required to operate a skid steer loader at ground level in the demolition industry. It includes planning and preparing; conducting machine pre-operational checks; preparing a site for the demolition process; removing demolition debris; selecting, removing and fitting loader attachments; removing demolition materials and waste; relocating skid steer loaders; and carrying out machine operator maintenance.

Application of the Unit

This unit of competency supports the role of demolition workers who demolish residential, commercial and industrial buildings and structures.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to demolition work in different States and Territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	***Compliance requirements*** relevant to skid steer loader operations are accessed, interpreted and applied.
		1.2	Work instructions are obtained from relevant ***information***, confirmed with team members and other relevant personnel, and applied to planning and preparation.
		1.3	***Work health and safety (WHS) requirements*** are identified and applied to task planning according to safety plans and policies.
		1.4	***Environmental requirements*** are identified for the project according to environmental plans and regulatory obligations.
		1.5	Maintenance tools and equipment are checked for serviceability, and faults are reported or rectified.
		1.6	Skid steer loader pre-start, start-up, park and shut-down operational checks are conducted according to manufacturer recommendations.
		1.7	Skid steer loader controls and functions are checked for serviceability, and faults are rectified and reported.
2	Select, check and fit attachments.	2.1	Skid steer loader ***attachments*** are selected to carry out tasks, consistent with job requirements.
		2.2	Attachments and connections are checked for excessive wear, and replaced and reported as required.
		2.3	Attachments are securely fitted according to safe work

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			method, and safety pins or clips are fitted according to manufacturer specifications and workplace requirements.
		2.4	Hydraulic components are ***checked*** and faults are rectified or components replaced, and reported.
		2.5	Operation of hydraulic system is tested before applying load according to manufacturer specifications and workplace requirements.
		2.6	Attachment operation is tested by raising and lowering attachment and attachment is locked in raised position for travel according to manufacturer specifications and workplace requirements.
		2.7	Attachments are removed, cleaned and stored according to manufacturer specifications and workplace requirements.
3	Prepare demolition site.	3.1	Requirements of site demolition plan are determined and discussed with team members according to workplace procedures.
		3.2	***Site inspection*** is conducted to determine condition of work site and surrounds before work begins, and safe work method statement is amended and approved as required.
		3.3	Confirmation is obtained from supervisor and regulatory authorities that all existing above and below ground services have been disconnected.
		3.4	Hazardous material is identified for separate handling according to workplace requirements and instructions.
		3.5	Mechanical equipment and plant are positioned in operating locations and appropriate exclusion zone and traffic control are arranged.
4	Operate skid steer loader for demolition process.	4.1	Skid steer loader general operating techniques are identified and applied to achieve optimum output according to manufacturer design specifications, while achieving specified tolerances.
		4.2	Site hazards associated with skid steer loader demolition operations are identified and ***safe operating techniques***

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			are followed to minimise risks.
		4.3	Skid steer loader is moved safely between work locations, observing relevant codes and traffic management requirements.
		4.4	Control measures are implemented to manage ***hazards arising from demolition process*** according to the demolition plan, safe work methods and regulatory requirements.
		4.5	***Demolition tasks*** are assessed immediately prior to starting and safe work method statement is reviewed to incorporate management of previously undiscovered hazards.
		4.6	Skid steer loader is operated at ground level to remove demolition debris using suitable attachments according to approved demolition plan and current safe work method.
		4.7	***Communication*** is maintained with team members, during the demolition process.
		4.8	Work site conditions and progress are monitored in consultation with team members and work is stopped or techniques adjusted as required, according to workplace requirements.
5	Carry out machine operator inspection and maintenance tasks.	5.1	Skid steer loader is safely parked and shut down, and attachments are removed.
		5.2	Skid steer loader is inspected for faults and defective parts are removed and replaced according to manufacturer specifications and workplace requirements.
		5.3	Regular programmed ***operator maintenance tasks*** are conducted according to manufacturer specifications and workplace requirements.
6	Clean up.	6.1	Work area is cleared and materials and waste are sorted and located for removal, as required, according to site demolition project environmental management plan.
		6.2	Maintenance tools and equipment are cleaned, checked,

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maintained and stored.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to:
  - recognise signs indicating undiscovered hazards on a demolition site, for example presence of termites
  - respond to change, such as differences in current work site environmental and sustainability requirements
- numeracy skills to:
  - check levels of lubricants in equipment
  - estimate weight of volumes of demolition debris
  - perform measurements and calculations associated with work, such as when determining load capacity of equipment
- oral communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - report hazards on the work site, including faults in tools, equipment and materials
  - use language and concepts appropriate to cultural differences
- reading skills to:
  - interpret documentation relating to work requirements, including:
    - drawings and specifications
    - job safety analyses (JSA)
    - safe work method statements (SWMS)
    - safety data sheets (SDS)
  - understand written instructions, procedures and signage
- writing skills to complete pre-operational checklists and equipment fault forms

Required knowledge

- general construction terminology
- hazards associated with the operation of skid steer loaders from ground level on residential, commercial and industrial demolition sites
- methods for materials storage and disposal, including environmentally friendly waste management
- method of operation, and maintenance requirements, of skid steer loader and attachments
- types, characteristics, uses and limitations of skid steer loaders in the demolition industry
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by observation of on-site operation of a skid steer loader and the use of different attachments to complete demolition tasks on large and complex buildings, working as part of a team.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to operate a skid steer loader from ground level to complete the following demolition tasks at a minimum of two different work sites:

- lifting and transfer of demolition rubble
- sorting materials
- loading trucks
- demolition of minor non-structural elements
- including:
  - knowledge of the requirements, procedures and instructions for conducting demolition skid steer loader operations
  - implementation of requirements, procedures and techniques for the safe, effective and efficient completion of demolition skid steer loader operations, including:
    - working with others to undertake and complete demolition skid steer loader operations that meet all of the required outcomes
    - consistent timely completion of demolition skid steer loader operations that safely, effectively and efficiently meet the required outcomes.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure
- realistic tasks covering the mandatory task requirements
- relevant specifications and work instructions
- plant, tools and equipment as listed appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- information relevant to each task, such as safety data sheets,

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work plans and approved specifications, forms and procedures manuals.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the following methods:

- direct observation of tasks
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Compliance requirements may include:

- Australian standards relevant to plant operation
- codes of practice for plant operation
- legislative and regulatory requirements for plant operation
- manufacturer guidelines and specifications
- organisational requirements and procedures
- requirements of Employment and Workplace Relations legislation
- requirements of Equal Employment Opportunity and Disability Discrimination legislation
- site requirements.

Information regarding

- advice and guidelines relating to regulatory and legislative

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work task instructions may include:	requirements for mechanical demolition processes • approved demolition plan • current Australian standards relating to operating skid steer loaders • diagrams or sketches • instructions issued by authorised organisational or external personnel • memos • safe work procedures relating to the conduct of mechanical demolition processes • safety data sheets • site signage • site traffic management plan • verbal, written and graphical instructions, including manufacturer specifications and instructions where specified • work bulletins • work schedules, plans and specifications.

Work health and safety requirements must comply with state or territory legislation and project safety plan may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including asbestos, lead-based paints, dust, pesticide residue, animal residue and the safe handling or quarantining procedures for each
	• personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including operational risk assessment and treatments associated with:
	  • falling objects
	  • lighting
	  • plant movement
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces

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- working in proximity to others
- traffic management, barriers and signage
- use of tools and equipment
- workplace environmental requirements.

Environmental requirements may include:

- clean-up management
- dust and noise control
- sedimentation control
- vibration management
- waste management.

Attachments may include:

- buckets
- hammers.

Checks must include for:

- bulges
- factures
- leaks
- splits.

Site inspection may include:

- assessing condition of property and surrounds
- communicating with those who may be affected by the demolition task
- erecting scaffolding for exclusion zones, if applicable
- identifying hazardous materials
- identifying position of hoses and cables clear of hazards
- installing supports and bracing
- location of signage and barricades
- providing for site safety.

Safe operating techniques for skid steer loaders may include:

- emergency shut-down and stopping
- management of hazards and risks, including:
  - buildings
  - cuttings
  - embankments
  - excavations
  - fires
  - hazardous materials
  - overhead and underground services
  - structures
  - traffic
  - trees
  - uneven or unstable terrain
- safe parking practices, ensuring:
  - access ways are clear
  - equipment or machinery is:

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- located a safe distance from excavations
- located away from overhangs and refuelling sites
- secured from unauthorised access or movement.

Hazards arising from demolition process may include:

- dust
- fire
- fumes
- noise
- vibration.

Demolition tasks that may be completed using a skid steer loader and attachments include:

- lifting and transfer of demolition rubble
- sorting materials
- loading trucks
- minor non-structural demolition.

Communication may include the use of:

- hand signals
- mobile equipment
- radios.

Operator maintenance tasks:

- must include:
  - cleaning
  - authorised servicing
  - monitoring, recording and reporting faults
- may include:
  - authorised minor replacements
  - assisting maintenance personnel during maintenance and repair activities.

Unit Sector(s)

Demolition

Custom Content Section

Not applicable.

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CPCCDE3024A Operate mobile plant on suspended floors on demolition sites

Modification History

New unit.
This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

Unit Descriptor

This unit of competency specifies the outcomes required to operate mobile plant on suspended floors to demolish building elements on or above the same suspended floor. It includes planning and preparing; conducting machine pre-operational checks; preparing a site for the demolition process; following demolition procedures for different building elements; selecting, removing and fitting attachments; removing demolition materials and waste; relocating excavators; and carrying out machine operator maintenance.

Application of the Unit

This unit of competency supports the role of demolition workers who operate mobile plant, such as excavators and skid steer loaders during the demolition of multi-storey residential, commercial and industrial buildings and structures, including chemical processing plants.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to demolition work in different States and Territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	***Compliance requirements*** relevant to excavator operations are accessed, interpreted and applied.
		1.2	Work instructions are obtained from relevant ***information***, confirmed with team members and other relevant personnel, and applied to planning and preparation.
		1.3	Instructions and advice from structural engineer regarding demolition techniques on suspended floors and load bearing capacities are followed.
		1.4	***Work health and safety (WHS) requirements*** are identified and applied to task planning according to safety plans and policies.
		1.5	Placement of mobile plant and allowable weight of demolition debris loads on suspended floors are confirmed according to advice of structural engineer.
		1.6	***Environmental requirements*** are identified for the project according to environmental plans and regulatory obligations.
		1.7	Tools and equipment for plant pre-start checks and operator maintenance tasks are checked for serviceability, and faults are reported or rectified.
		1.8	Mobile plant pre-start, start-up, park and shut-down operational checks are conducted according to manufacturer recommendations.
		1.9	Mobile plant controls and functions are checked for serviceability, and faults are rectified and reported.

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2	Select, check and fit attachments.	2.1	Mobile plant attachments are selected to carry out tasks, consistent with job requirements.
		2.2	Arms and connections are checked for excessive wear, and are replaced and reported as required.
		2.3	***Attachments*** are securely fitted according to safe work method, and safety pins or clips are fitted according to manufacturer specifications and workplace requirements.
		2.4	Hydraulic components are ***checked*** and faults are rectified or components replaced, and reported.
		2.5	Operation of hydraulic system is tested before applying load according to manufacturer specifications and workplace requirements.
		2.6	Attachment operation is tested by raising and lowering attachment and attachment is locked in position for travel according to manufacturer specifications and workplace requirements.
		2.7	Attachments are removed, maintained and stored according to manufacturer specifications and workplace requirements.
3	Prepare demolition site.	3.1	Requirements of site demolition plan are determined and discussed with team members according to workplace procedures.
		3.2	***Site inspection*** of property or dilapidation survey is conducted to determine condition of work site and surrounds before work begins, and safe work method statement is amended and approved as required.
		3.3	Confirmation is obtained from supervisor and regulatory authorities that specified services, above and below ground, have been disconnected and any remaining live services are identified and protected.
		3.4	Hazardous material is identified for separate handling according to workplace requirements and instructions.
		3.5	Mechanical equipment and plant are positioned in operating locations and appropriate exclusion zone and

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			traffic control are arranged.
4	Operate mobile plant for demolition process.	4.1	Mobile plant general operating techniques are identified and applied to achieve safe, effective and efficient output according to manufacturer's design specifications while achieving specified tolerances.
		4.2	Site hazards associated with mobile plant demolition operations are identified and ***safe operating techniques*** are followed to minimise risks.
		4.3	Placement of mobile plant and allowable weight of demolition debris loads on suspended floors are monitored and controlled throughout the demolition process.
		4.4	Mobile plant is moved safely between work locations, observing relevant codes and traffic management requirements.
		4.5	Control measures are implemented to manage ***hazards arising from demolition process*** according to the demolition plan, safe work methods and regulatory requirements.
		4.6	***Demolition tasks*** are assessed immediately prior to starting and safe work method statement is reviewed to incorporate management of previously undiscovered hazards.
		4.7	Mobile plant is operated on suspended floors to demolish building elements or remove demolition debris using suitable attachments according to approved demolition plan, structural engineering advice, and current safe work method.
		4.8	***Communication*** is maintained with team members, during the demolition process.
		4.9	***Work site conditions and progress are monitored*** in consultation with team members and work is stopped or techniques adjusted as required, according to workplace requirements.

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5	Carry out machine operator inspection and maintenance tasks.	5.1	Mobile plant is safely parked and shut down, and attachments are removed and stored according to workplace requirements.
		5.2	Mobile plant is inspected for faults and defective parts are removed and replaced according to manufacturer specifications and workplace requirements.
		5.3	Regular programmed ***operator maintenance tasks*** are conducted according to manufacturer specifications and workplace requirements and log sheets are completed.
6	Clean up.	6.1	Work area is cleared and materials and waste are sorted and located for removal, as required, according to site demolition project environmental management plan.
		6.2	Maintenance tools and equipment are cleaned, checked, maintained and stored.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to:
  - recognise signs indicating undiscovered hazards on a demolition site, for example presence of termites
  - respond to change, such as differences in current work site environmental and sustainability requirements
- numeracy skills to:
  - estimate weight of accumulated volumes of demolition debris on suspended floors
  - calculate combined weight of mobile plant and demolition debris on suspended floors
  - check levels of lubricants in equipment
  - perform measurements and calculations associated with work, such as when determining specified length of wall to be removed
- oral communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - report hazards on the work site, including faults in tools, equipment and materials
  - use language and concepts appropriate to cultural differences
- reading skills to:
  - interpret documentation relating to work requirements, including:
    - drawings and specifications
    - job safety analyses (JSA)
    - safe work method statements (SWMS)
    - safety data sheets (SDS)
  - understand written instructions, procedures and signage
- writing skills to complete pre-operational checklists, equipment fault forms and log sheets

Required knowledge

- basic principles of structural engineering relating to:
  - placement of loads on suspended floors during demolition of the same floor
  - propping requirements
  - stability of buildings and structures throughout the demolition process
- general construction terminology
- hazards associated with the operation of mobile plant on suspended floors on residential,

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commercial and industrial demolition sites
- hazards associated with inappropriate demolition methodology, including structural collapse or the premature failure of floors or other structural elements
- methods for materials storage and disposal, including environmentally friendly waste management
- method of operation and maintenance requirements of mobile plant and attachments
- types, characteristics, uses and limitations of mobile plant in the demolition industry
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by observation of on-site operation of an excavator and the use of different attachments to complete demolition tasks on large and complex buildings, working as part of a team.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to operate an mobile plant on suspended floors during the floor demolition process completing the following mandatory demolition tasks at a minimum of two different work sites:

- progressive demolition of roof, wall and floor from a suspended slab
- removal of rubble
- including:
  - assessment of accumulated loads
  - knowledge of the structural engineering constraints and requirements for working on a suspended slab
  - knowledge of the requirements, procedures and instructions for conducting demolition mobile plant operations
  - implementation of requirements, procedures and techniques for the safe, effective and efficient completion of demolition mobile plant operations, including:
    - working with others to undertake and complete demolition excavator operations that meet all of the required outcomes
    - consistent timely completion of demolition mobile plant operations that safely, effectively and efficiently meet the required outcomes.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure
- realistic tasks covering the mandatory task requirements
- relevant specifications and work instructions
- plant, tools and equipment as listed appropriate to applying safe work practices
- support materials appropriate to activity

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- workplace instructions relating to safe work practices and addressing hazards and emergencies
- information relevant to each task, such as safety data sheets, work plans and approved specifications, forms and procedures manuals.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the following methods:

- direct observation of mandated tasks
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Compliance requirements may include:

- Australian standards relevant to plant operation and demolition
- codes of practice for plant operation
- legislative and regulatory requirements for plant operation
- manufacturer guidelines and specifications
- organisational requirements and procedures
- requirements of Employment and Workplace Relations legislation
- requirements of Equal Employment Opportunity and

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Disability Discrimination legislation

- site requirements.

Information regarding work task instructions may include:

- advice and guidelines relating to regulatory and legislative requirements for mechanical demolition processes
- advice and instructions from structural engineer regarding placement of loads on suspended floors
- approved demolition plan
- current Australian standards relating to operating mobile plant on suspended floors on demolition sites
- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- memos
- SWMS relating to the conduct of mechanical demolition processes
- safety data sheets
- site signage
- site traffic management plan
- verbal, written and graphical instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Work health and safety requirements must comply with state or territory legislation and project safety plan may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures
- handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
- hazard control
- hazardous materials and substances, including asbestos, lead-based paints, dust, pesticide residue, animal residue and the safe handling or quarantining procedures for each
- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including operational risk assessment and treatments associated with:
  - falling objects
  - lighting
  - plant movement
  - power cables, including overhead service trays, cables and conduits
  - restricted access barriers
  - surrounding structures

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- traffic control
- trip hazards
- work site visitors and the public
- working at heights
- working in confined spaces
- working in proximity to others
- traffic management, barriers and signage
- use of tools and equipment
- workplace environmental requirements.

Environmental requirements may include:

- clean-up management
- control of spills and leaks of hydraulics, oil and fuels
- dust and noise control
- sedimentation control
- vibration management
- waste management.

Attachments may include:

- buckets
- grapples
- hammers
- magnets
- pulverisers
- rippers
- rock breakers
- shears.

Checks must include for:

- bulges
- factures
- leaks
- splits.

Site inspection may include:

- assessing condition of property and surrounds
- communicating with those who may be affected by the demolition task
- determining floor loadings
- erecting scaffolding and public protection
- identifying hazardous materials
- identifying position of hoses and cables clear of hazards
- installing supports and bracing
- location of signage and barricades
- providing site safety.

Safe operating techniques for mobile plant may include:

- emergency shut-down and stopping
- management of hazards and risks, including:
  - falls from heights
  - fires

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- hazardous materials
- overloading of suspended slab
- structures
- structural collapse
- uneven or unstable terrain
- safe parking practices ensuring:
  - access ways are clear
  - equipment or machinery is:
    - located a safe distance from excavations
    - located away from refuelling sites
    - secured from unauthorised access or movement.

Hazards arising from demolition process may include:

- dust
- fire
- noise
- vibration.

Demolition tasks that may be completed using mobile plant and attachments on suspended floors include:

- progressive demolition of roof, wall and suspended slab (floor)
- removal of demolition rubble to specified locations for disposal.

Communication may include the use of:

- hand signals
- mobile equipment
- radios.

Monitoring of work site conditions and progress must include:

- degraded structures
- hazardous materials
- live edges
- overhead and below ground services
- potential effect to neighbouring properties
- potential effect to the general public
- termite activity
- trenches
- unconsolidated ground or fill materials
- underground storage tanks.

Operator maintenance tasks:

- must include:
  - cleaning
  - authorised servicing
  - monitoring, recording and reporting faults
- may include:
  - authorised minor replacements
  - assisting maintenance personnel during maintenance and

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repair activities.

Unit Sector(s)

Demolition

Custom Content Section

Not applicable.

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CPCCDE3025A Operate remote-controlled plant on demolition sites

Modification History

New unit
This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

Unit Descriptor

This unit of competency specifies the outcomes required to operate remote-controlled plant to conduct high risk demolition operations, such as overhead cutting, sawing and jack hammering; and work in restricted spaces, such as tunnels. Remote-controlled plant may be operated at ground level, below ground or on suspended floors.

Application of the Unit

This unit of competency supports the role of demolition workers who demolish residential, commercial and industrial buildings and structures.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to demolition work in different States and Territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	***Compliance requirements*** relevant to remote-controlled plant demolition operations are accessed, interpreted and applied.
		1.2	Work instructions are obtained from relevant ***information***, confirmed with team members and other relevant personnel, and applied to planning and preparation.
		1.3	Instructions and advice from structural engineer regarding demolition techniques on suspended floors and load bearing capacities are followed.
		1.4	***Work health and safety (WHS) requirements*** are identified and applied to task planning according to safety plans and policies.
		1.5	***Environmental requirements*** are identified for the project according to environmental plans and regulatory obligations.
		1.6	Maintenance tools and equipment are checked for serviceability, and faults are reported or rectified.
		1.7	Remote-controlled plant pre-start, start-up, park and shut-down operational checks are conducted according to manufacturer recommendations.
		1.8	Remote-controlled plant controls and functions, including brakes and manoeuvrability, are checked for serviceability, and faults are rectified and reported.

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2	Select, check and fit attachments.	2.1	Remote-controlled plant ***attachments*** are selected to carry out tasks, consistent with job requirements and according to manufacturer specifications.
		2.2	Attachments' arms and connections are checked for excessive wear, and replaced and reported as required.
		2.3	Attachments are securely fitted according to safe work method, and safety pins or clips are fitted according to manufacturer specifications and workplace requirements.
		2.4	Hydraulic components are ***checked*** and faults are rectified or components replaced, and reported.
		2.5	Operation of hydraulic system is tested before applying load according to manufacturer specifications and workplace requirements.
		2.6	Attachment operation is tested by raising and lowering attachment and attachment is locked in raised position for travel according to manufacturer specifications and workplace requirements.
		2.7	Attachments are removed, cleaned and stored according to manufacturer specifications and workplace requirements.
3	Prepare demolition site.	3.1	Requirements of site demolition plan are determined and discussed with team members according to workplace procedures.
		3.2	***Site inspection*** of property or dilapidation survey is conducted to determine condition of work site and surrounds before work begins, and safe work method statement is amended and approved as required.
		3.3	Confirmation is obtained from supervisor and regulatory authorities that all existing services have been disconnected.
		3.4	Hazardous material is identified for separate handling according to workplace requirements and instructions.
		3.5	Mechanical equipment and plant are positioned in operating locations and appropriate exclusion zone and

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			traffic control are arranged.
4	Operate remote-controlled plant loader for demolition process.	4.1	Remote-controlled plant operating techniques are identified and applied to achieve optimum output according to manufacturer's design specifications while achieving specified tolerances.
		4.2	Site hazards associated with remote-controlled plant demolition operations are identified and ***safe operating techniques*** are followed to minimise risks.
		4.3	Remote-controlled plant is moved safely between work locations, observing relevant codes and traffic management requirements.
		4.4	Control measures are implemented to manage ***hazards arising from demolition process*** according to the demolition plan, safe work methods and regulatory requirements.
		4.5	***Demolition tasks*** are assessed immediately prior to starting and safe work method statement is reviewed to incorporate management of unpredicted hazards.
		4.6	Remote-controlled plant is operated at a safe distance to demolish building elements using suitable attachments according to approved demolition plan and current safe work method.
		4.7	***Communication*** is maintained with team members, during the demolition process.
		4.8	Work site conditions and progress are monitored in consultation with team members, and work is stopped or techniques adjusted as required, according to workplace requirements.
5	Carry out machine operator inspection and maintenance tasks.	5.1	Remote-controlled plant is safely parked and shut down.
		5.2	Remote-controlled plant is inspected for faults and defective parts are removed and replaced according to manufacturer specifications and workplace requirements.
		5.3	Regular programmed ***operator maintenance tasks*** are conducted according to manufacturer specifications and

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			workplace requirements.
6	Clean up.	6.1	Work area is cleared and materials and waste are sorted and located for removal, as required, according to site demolition project environmental management plan.
		6.2	Maintenance tools and equipment are cleaned, checked, maintained and stored.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to:
  - recognise signs indicating undiscovered hazards on a demolition site, for example presence of termites
  - respond to change, such as differences in current work site environmental and sustainability requirements
- numeracy skills to:
  - estimate weight of accumulated volumes of demolition debris on suspended floors
  - calculate combined weight of remote-controlled plant and demolition debris on suspended floors
  - check levels of lubricants in equipment
  - perform measurements and calculations associated with work, such as when determining specified length of wall to be removed
- oral communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - report hazards on the work site, including faults in tools, equipment and materials
  - use language and concepts appropriate to cultural differences
- reading skills to:
  - interpret documentation relating to work requirements, including:
    - drawings and specifications
    - job safety analyses (JSA)
    - safe work method statements (SWMS)
    - safety data sheets (SDS)
  - understand written instructions, procedures and signage
- writing skills to complete pre-operational checklists and equipment fault forms

Required knowledge

- basic principles of structural engineering regarding loads on suspended floors
- general construction terminology
- hazards associated with the operation of remote-controlled plant on residential, commercial and industrial demolition sites
- methods for materials storage and disposal, including environmentally friendly waste management

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- method of operation and maintenance requirements of remote-controlled plant and attachments
- types, characteristics, uses and limitations of remote-controlled plant in the demolition industry
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by observation of on-site operation of remote-controlled plant and the use of different attachments to complete demolition tasks on large buildings working as part of a team.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to complete the following mandatory demolition tasks:

- fit and secure grapples, buckets and hydraulic hammers and remove, maintain and store attachments after use
- position plant appropriately and load a truck with building rubble using a bucket
- progressively, and with reference to the pre-planned and controlled sequencing of tasks outlined in the demolition plan, logically demolish all or part of three different types of buildings or structures, including breaking up a concrete floor or structure using a hydraulic hammer attachment
- segregating building materials effectively for recycling or disposal
- a person should also demonstrate:
  - knowledge of the requirements, procedures and instructions for conducting demolition remote-controlled plant operations
  - implementation of requirements, procedures and techniques for the safe, effective and efficient completion of demolition remote-controlled plant operations, including:
    - working with others to undertake and complete demolition remote-controlled plant operations that meet all of the required outcomes
    - consistent timely completion of demolition remote-controlled plant operations that safely, effectively and efficiently meet the required outcomes.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure
- realistic tasks covering the mandatory task requirements

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- relevant specifications and work instructions
- plant, tools and equipment as listed appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- information relevant to each task, such as safety data sheets, work plans and approved specifications, forms and procedures manuals.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the following methods:

- direct observation of mandated tasks
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Compliance requirements may include:

- Australian standards relevant to plant operation
- codes of practice for plant operation
- legislative and regulatory requirements for plant operation
- manufacturer guidelines and specifications

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- organisational requirements and procedures
- requirements of Employment and Workplace Relations legislation
- requirements of Equal Employment Opportunity and Disability Discrimination legislation
- site requirements.

Information regarding work task instructions may include:

- advice and guidelines relating to regulatory and legislative requirements for mechanical demolition processes
- advice and instructions from structural engineer regarding loads on suspended floors
- approved demolition plan
- current Australian standards relating to operating remote-controlled plant on demolition sites
- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- memos
- safe work procedures relating to the conduct of mechanical demolition processes
- safety data sheets
- site signage
- site traffic management plan
- verbal, written and graphical instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Work health and safety requirements must comply with state or territory legislation and project safety plan may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures
- handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
- hazard control
- hazardous materials and substances and the safe handling or quarantining procedures for each type, including:
  - animal residue
  - asbestos
  - dust
  - lead-based paints
  - pesticide residue
- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including operational risk

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assessment and treatments associated with:
  - falling objects
  - lighting
  - load bearing capacities of suspended floors
  - plant movement
  - power cables, including overhead service trays, cables and conduits
  - restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
- traffic management, barriers and signage
- use of tools and equipment
- workplace environmental requirements.

Environmental requirements may include:

- clean-up management
- dust and noise control
- sedimentation control
- vibration management
- waste management.

Attachments may include:

- backhoe
- buckets
- buckets, including 4:1 buckets
- chain digger
- clamshell buckets
- concrete crushers
- concrete cutter or saw
- crushing jaws
- dozer blade
- drilling equipment
- forklift
- front end loader (FEL)
- grabs
- grapples
- hammer
- metal shears
- planers
- power broom

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- profiler
- pulverisers
- rippers
- rock breakers
- rotary hoe
- saws
- scabblers
- scarifier
- shears
- side angling device
- tiller/mixer
- vibrating plates.

Checks must include for:

- bulges
- factures
- leaks
- splits.

Site inspection may include:

- assessing condition of property and surrounds
- communicating with those who may be affected by the demolition task
- determining floor loadings
- erecting scaffolding
- identifying hazardous materials
- identifying position of hoses and cables clear of hazards
- installing supports and bracing
- location of signage and barricades
- providing for site safety.

Safe operating techniques for remote-controlled plant loaders may include:

- emergency shut-down and stopping
- management of hazards and risks, including:
  - bridges
  - buildings
  - cuttings
  - embankments
  - excavations
  - fires
  - hazardous materials
  - overhead and underground services
  - structures
  - traffic
  - trees
  - uneven or unstable terrain
- safe parking practices ensuring:

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- access ways are clear
- equipment or machinery is:
  - located a safe distance from excavations
  - located away from overhangs and refuelling sites
  - secured from unauthorised access or movement.

Hazards arising from demolition process may include:

- dust
- fire
- noise
- vibration.

Demolition tasks that may be completed using remote-controlled plant and attachments include:

- controlled collapse of structures by:
  - pulling using cables
  - pushing
- demolition of:
  - buildings
  - chemical or manufacturing plants
  - chimneys
  - tanks
  - towers
- excavation of:
  - basements
  - footings
  - slabs
- loading materials
- processing and sorting materials.

Communication may include the use of:

- hand signals
- mobile equipment
- radios.

Operator maintenance tasks:

- must include:
  - cleaning
  - authorised servicing
  - monitoring, recording and reporting faults
- may include:
  - authorised minor replacements
  - assisting maintenance personnel during maintenance and repair activities.

Unit Sector(s)

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Demolition

Custom Content Section

Not applicable.

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CPCCDE3026A Operate excavators at ground level to demolish building elements

Modification History

New unit.
This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

Unit Descriptor

This unit of competency specifies the outcomes required to operate an excavator at ground level in the demolition industry. The unit covers planning and preparing; conducting machine pre-operational checks; preparing a site for the demolition process; following demolition procedures for different building elements; selecting, removing and fitting attachments; removing demolition materials and waste; relocating excavators; and carrying out machine operator maintenance.

Application of the Unit

This unit of competency supports the role of demolition workers who demolish residential, commercial and industrial buildings and structures.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to demolition work in different States and Territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	***Compliance requirements*** relevant to excavator operations are accessed, interpreted and applied.
		1.2	Work instructions are obtained from relevant ***information***, confirmed with team members and other relevant personnel, and applied to planning and preparation.
		1.3	***Work health and safety (WHS) requirements*** are identified and applied to task planning according to safety plans and policies.
		1.4	***Environmental requirements*** are identified for the project according to environmental plans and regulatory obligations.
		1.5	Tools and equipment for pre-start checks and operator maintenance tasks are checked for serviceability, and faults are rectified and reported.
		1.6	Excavator pre-start, start-up, park and shut-down operational checks are conducted according to manufacturer recommendations.
		1.7	Excavator controls and functions are checked for serviceability, and faults are rectified and reported.
2	Select, check and fit attachments.	2.1	Excavator ***attachments*** are selected to carry out tasks, consistent with job requirements.
		2.2	Attachments and connections are checked for excessive

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			wear, and replaced and reported as required.
		2.3	Attachments are securely fitted according to safe work method, and applicable safety retaining device is used according to manufacturer specifications and workplace requirements.
		2.4	Hydraulic components are ***checked*** and faults are rectified or components replaced, and reported.
		2.5	Operation of hydraulic system is tested before applying load according to manufacturer specifications and workplace requirements.
		2.6	Attachment operation is tested by raising and lowering, and attachment is securely locked in position for travel according to manufacturer specifications and workplace requirements.
		2.7	Attachments are removed, maintained and stored according to manufacturer specifications and workplace requirements.
3	Prepare demolition site.	3.1	Requirements of site demolition plan are determined and discussed with team members according to workplace procedures.
		3.2	***Site inspection*** of property or dilapidation survey is conducted to determine condition of work site and surrounds before work begins, and safe work method statement is amended and approved as required.
		3.3	Confirmation is obtained from supervisor and regulatory authorities that specified services, above and below ground, have been disconnected and any remaining live services are identified and protected.
		3.4	Hazardous material is identified for separate handling according to workplace requirements and instructions.
		3.5	Mechanical equipment and plant are positioned in operating locations and appropriate exclusion zone and traffic control are arranged.

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4	Operate excavator for demolition process.	4.1	Excavator general operating techniques are identified and applied to achieve safe, effective and efficient output according to manufacturer's design specifications while achieving specified tolerances.
		4.2	Site hazards associated with excavator demolition operations are identified and ***safe operating techniques*** are followed to minimise risks.
		4.3	Excavator is moved safely between work locations, observing relevant codes and traffic management requirements.
		4.4	Control measures are implemented to manage ***hazards arising from demolition process*** according to the demolition plan, safe work methods and regulatory requirements.
		4.5	***Demolition tasks*** are assessed immediately prior to starting, and safe work method statement is reviewed to incorporate management of undiscovered hazards.
		4.6	Excavator is operated at ground level to demolish building elements using suitable attachments according to approved demolition plan and current safe work method.
		4.7	***Communication*** is maintained with team members, during the demolition process.
		4.8	***Work site conditions and progress are monitored*** in consultation with team members, and work is stopped or techniques adjusted as required, according to workplace requirements.
5	Carry out machine operator inspection and maintenance tasks.	5.1	Excavator is safely parked and shut down, and attachments are removed and stored according to workplace requirements.
		5.2	Excavator is inspected for faults and defective parts are removed and replaced according to manufacturer specifications and workplace requirements.
		5.3	Regular programmed ***operator maintenance tasks*** are conducted according to manufacturer specifications and workplace requirements, and log sheets are completed.

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6	Clean up.	6.1	Work area is cleared and materials and waste are sorted and located for removal, as required and according to site demolition project environmental management plan.
		6.2	Maintenance tools and equipment are cleaned, checked, maintained and stored.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to:
  - recognise signs indicating undiscovered hazards on a demolition site, for example presence of termites
  - respond to change, such as differences in current work site environmental and sustainability requirements
- numeracy skills to:
  - check levels of lubricants in equipment
  - estimate weight of volumes of demolition debris
  - perform measurements and calculations associated with work, such as when determining load capacity of equipment
- oral communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - report hazards on the work site, including faults in tools, attachments, equipment and materials
  - use language and concepts appropriate to cultural differences
- reading skills to:
  - interpret documentation relating to work requirements, including:
    - drawings and specifications
    - job safety analyses (JSA)
    - safe work method statements (SWMS)
    - safety data sheets (SDS)
  - understand written instructions, procedures and signage
- writing skills to complete pre-operational checklists, equipment fault forms and log sheets

Required knowledge

- general construction terminology
- hazards associated with the operation of excavators from ground level on residential, commercial and industrial demolition sites
- methods for materials storage and disposal, including environmentally friendly waste management
- method of operation and maintenance requirements of excavator and attachments

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- types, characteristics, uses and limitations of excavators in the demolition industry
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by observation of on-site operation of an excavator and the use of different attachments to complete demolition tasks on large and complex buildings, working as part of a team.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to operate an excavator from ground level to complete the following mandatory demolition tasks:

- fit and secure grapples, buckets and hydraulic hammers and remove, maintain and store attachments after use
- position excavator appropriately and load a truck with building rubble using a bucket
- progressively and, with reference to the pre-planned and controlled sequencing of tasks outlined in the demolition plan, logically demolish all or part of three different types of buildings or structures including breaking up a concrete floor or structure using a hydraulic hammer attachment
- segregating building materials effectively for recycling or disposal
- a person should also demonstrate:
  - selection of appropriate sized machine and attachments
  - identification of appropriate machine (operator) protection or guarding
  - knowledge of the requirements, procedures and instructions for conducting demolition excavator operations
  - implementation of requirements, procedures and techniques for the safe, effective and efficient completion of demolition excavator operations, including:
    - working with others to undertake and complete demolition excavator operations that meet all of the required outcomes
    - consistent timely completion of demolition excavator operations that safely, effectively and efficiently meet the required outcomes.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- must meet relevant compliance requirements.

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Resource implications for assessment include:

- an induction procedure
- realistic tasks covering the mandatory task requirements
- relevant specifications and work instructions
- plant, tools and equipment as listed appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- information relevant to each task, such as safety data sheets, work plans and approved specifications, forms and procedures manuals.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the following methods:

- direct observation of mandated tasks
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Compliance

- Australian standards relevant to plant operation and

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requirements may include:

demolition

- codes of practice for plant operation
- legislative and regulatory requirements for plant operation
- manufacturer guidelines and specifications
- organisational requirements and procedures
- requirements of Employment and Workplace Relations legislation
- requirements of Equal Employment Opportunity and Disability Discrimination legislation
- site requirements.

Information regarding work task instructions may include:

- advice and guidelines relating to regulatory and legislative requirements for mechanical demolition processes
- approved demolition plan
- current Australian standards relating to operating excavators to demolish building elements
- diagrams or sketches including identification of load bearing and non-load bearing elements
- instructions issued by authorised organisational or external personnel
- memos
- safe work methods statements (SWMS) relating to the conduct of mechanical demolition processes, including identification of suspended elements that may require propping
- safety data sheets
- site signage
- site traffic management plan
- verbal, written and graphical instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Work health and safety requirements must comply with state or territory legislation and project safety plan may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures
- handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
- hazard control
- hazardous materials and substances, including asbestos, lead-based paints, dust, pesticide residue, animal residue and the safe handling or quarantining procedures for each
- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including operational risk

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assessment and treatments associated with:
- falling objects
- lighting
- plant movement
- power cables, including overhead service trays, cables and conduits
- restricted access barriers
- surrounding structures
- traffic control
- trip hazards
- work site visitors and the public
- working at heights
- working in confined spaces
- working in proximity to others

- traffic management, barriers and signage
- use of tools and equipment
- workplace environmental requirements.

Environmental requirements may include:
- clean-up management
- control of spills and leaks of hydraulics, oil and fuels
- dust and noise control
- sedimentation control
- vibration management
- waste management.

Attachments may include:
- buckets
- grapples
- hammers
- magnets
- pulverisers
- rippers
- rock breakers
- shears.

Checks must include for:
- bulges
- factures
- leaks
- splits.

Site inspection may include:
- assessing condition of property and surrounds
- communicating with those who may be affected by the demolition task
- erecting scaffolding for exclusion zones and public protection, if applicable
- identifying hazardous materials

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- identifying position of hoses and cables clear of hazards
- installing supports and bracing
- location of signage and barricades
- providing for site safety.

Safe operating techniques for excavators may include:

- emergency shut-down and stopping
- management of hazards and risks, including:
  - buildings
  - cuttings
  - embankments
  - excavations
  - fires
  - hazardous materials
  - overhead and underground services
  - structures
  - traffic
  - trees
  - uneven or unstable terrain
- safe parking practices ensuring:
  - access ways are clear
  - equipment or machinery is:
    - located a safe distance from excavations
    - located away from refuelling sites
    - secured from unauthorised access or movement.

Hazards arising from demolition process may include:

- dust
- fire
- fumes
- noise
- vibration.

Demolition tasks that may be completed using an excavator and attachments may include:

- controlled collapse of structures by:
  - pulling using cables
  - pushing
- demolition of:
  - buildings
  - chemical or manufacturing plants
  - chimneys
  - tanks
  - towers
- excavation of:
  - basements
  - footings

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- slabs
- loading materials
- processing and sorting materials.

Communication may include the use of:

- hand signals
- mobile equipment
- radios.

Monitoring of work site conditions and progress must include:

- degraded structures
- hazardous materials
- live edges
- overhead and below ground services
- potential effect to neighbouring properties
- potential effect to the general public
- trenches
- unconsolidated ground or fill materials
- underground storage tanks.

Operator maintenance tasks:

- must include:
  - authorised servicing
  - cleaning
  - daily checks
  - monitoring, recording and reporting faults
- may include:
  - authorised minor replacements
  - assisting maintenance personnel during maintenance and repair activities.

Unit Sector(s)

Demolition

Custom Content Section

Not applicable.

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CPCCDE4001A Plan and prepare for activities on demolition sites

Modification History

New unit.
This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

Unit Descriptor

This unit of competency specifies the outcomes required to assess the size and scope of large demolition projects, including structures or installations above 15 metres, on different types of sites and identify the resources required to complete the project on time and within budget. It includes communication of project requirements to team members in preparation for demolition work to commence.

Application of the Unit

This unit of competency supports the role of demolition supervisors who identify and plan resource requirements for large demolition projects, including structures or installations above 15 metres. It involves working with others and leading a team.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to demolition work in different States and Territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Assess demolition site and scope of work.	1.1	Demolition plan is reviewed and site inspected to evaluate size and complexity of demolition tasks.
		1.2	Concurrent work of other construction teams is assessed and communication channels established or confirmed.
		1.3	Site access and egress and traffic management plan are assessed, and additional provisions or changes negotiated as required.
		1.4	Provisions for site storage and amenities are assessed and additional provisions or changes arranged as required.
		1.5	General site work health and safety (WHS) and environmental requirements are confirmed and applied to planning.
		1.6	***Regulatory compliance requirements*** are confirmed and applied to planning.
		1.7	HAZMAT audits are arranged prior to demolition work start date and findings are applied to planning.
2	Schedule demolition activities.	2.1	Demolition plan is analysed and individual ***demolition tasks*** prioritised according to WHS, site and ***resource requirements.***
		2.2	Concurrent tasks are planned and sequenced to maximise efficient use of resources.
		2.3	Resource hours required for individual demolition tasks are estimated with allowances for contingencies.

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		2.4	Timelines for different project stages are calculated, compared to demolition plan, and adjustments are made as required.
		2.5	Project schedule is prepared, reviewed by relevant personnel, amended as required and processed according to workplace requirements.
3	Prepare safe work method statements for individual demolition activities.	3.1	***Hazards and risks*** associated with each demolition task ***are assessed*** by site inspection, discussion with relevant WHS and site personnel, and consideration of sequencing of tasks.
		3.2	Risk management strategies are analysed according to the hierarchy of controls in consultation with relevant WHS and site personnel.
		3.3	Safe work method statement (SWMS) is prepared for each demolition task with instructions for review immediately before work starts to re-assess work site conditions resulting from previous tasks.
4	Arrange resources for demolition activities.	4.1	Resource requirements for demolition tasks are confirmed, and requirements for concurrent tasks calculated according to project schedule.
		4.2	Arrangements are made for delivery of required plant, tools and equipment according to project schedule.
		4.3	Specialised skill requirements for different project stages are determined and skills of available team members assessed to identify skill shortages.
		4.4	Recruitment of additional team members with required skills is conducted and completed within required timeframe for prompt start to work.
		4.5	Team members are allocated to tasks and human resource requirements for all project stages are checked and confirmed as complete.

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5	Conduct site induction and team briefing for demolition project.	5.1	Site tour and general site induction regarding safety and environmental requirements are arranged or conducted according to project and workplace requirements.
		5.2	Details of task allocations and scheduling are explained and discussed, and team understanding of work requirements is confirmed.
		5.3	Concurrent work of other construction teams, and interactions and communication channels, are explained and understanding of team members is confirmed.
		5.4	Provisions for dealing with risks, hazards and contingencies are explained, and understanding of team members is confirmed.
		5.5	Team members are encouraged to ask questions for clarification at all stages of the work and to provide suggestions for improvements in processes.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to:
  - assimilate past experience to develop and implement solutions to problems
  - respond to change, such as differences in quality standards required by clients
- numeracy skills to:
  - calculate resource requirements
  - schedule tasks
- oral communication skills to:
  - conduct team briefings and direct staff
  - develop and maintain relationships with clients and other relevant personnel
- reading skills to interpret contractual documentation
- writing skills to prepare safe work method statements

Required knowledge

- contract management strategies
- customer service strategies
- demolition procedures, techniques and safety requirements
- demolition site inspection procedures
- hazards and risks existing or arising on demolition sites and relevant risk management strategies
- legislation, regulations, codes and standards relating to different stages of the demolition process
- plant, tools and equipment required for demolition tasks, including:
  - permits and licences required
  - safe operating procedures
- project management strategies
- quality management strategies
- team leadership strategies

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by reviewing the planning and preparation for individual demolition activities in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to plan and prepare for individual demolition tasks on two different large demolition projects, one of which must involve structures or installations above 15 metres, including:

- interpreting and applying to planning:
  - contractual requirements
  - relevant legislation, regulations, codes and standards, including WHS, environmental and quality requirements
- inspecting demolition sites for existing hazards and risks and applying relevant risk management strategies to planning
- planning demolition tasks to ensure:
  - efficient use of resources
  - timely completion of tasks to required standards
- preparing safe work method statements for different demolition tasks in consultation with relevant personnel
- briefing team members to ensure understanding of requirements.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure
- realistic tasks covering the mandatory task requirements
- support materials appropriate to activity, including:
  - access to industry information relating to legislation, regulations, codes and standards
  - contractual information and work specifications.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the following methods:

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- direct observation of tasks in real work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing managers or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Regulatory compliance requirements must include:

- permits and licences for different tasks
- noise limitations
- lighting requirements
- traffic movement requirements.

Demolition tasks must include:

- manual demolition of:
  - floors
  - frame
  - roofs
  - structural members
  - walls
- mechanical demolition, including work on suspended floors
  - induced collapse
  - tasks involving special conditions or requirements, such as:
  - arched roofs, domes, masonry and brick arches
  - basements, cellars and vaults

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- chimneys and spires
- facade retention
- lift shafts
- pre- and post-tensioned concrete
- pre-cast concrete panels
- pylons and masts
- storage tanks and pipelines
- structurally unsound buildings or structures.

Resource requirements must include:

- equipment
- human resources, including personnel with:
  - specialised skills
  - licences to operate plant and equipment
- materials
- plant
- tools.

Assessment of hazards and risks must include:

- adjacent buildings
- debris
- exposure to:
  - dust
  - fumes
  - noise
  - ultraviolet (UV) rays
  - vibrations
- evidence of undocumented damage, such as by:
  - fire
  - termites
- fall hazards
- fragile roofing
- hazardous materials
- lifting and handling of heavy materials and components
- loading of demolition materials and plant on suspended floors
- penetrations
- people on site
- pits
- plant and equipment
- services, including:
  - electricity
  - gas
  - telecommunications
  - water

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    - which may be:
        - overhead
        - underground
        - undocumented
        - within elements of the structure
- storage or placement of demolition materials, plant, tools and equipment
- structural integrity of the building to be demolished at all stages of the project, such as after partial demolition of:
    - roof
    - walls
- weather conditions, especially wind speed.

Unit Sector(s)

Demolition

Custom Content Section

Not applicable.

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CPCCDE4002A Plan and supervise demolition work to minimise environmental and public health and safety impact

Modification History

New unit.
This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

Unit Descriptor

This unit of competency specifies the outcomes required to monitor and manage large demolition projects, including structures or installations above 15 metres, to minimise environmental and public health and safety impact. It includes interpreting and meeting relevant compliance requirements, and developing and implementing proactive measures to exceed them where possible.

Application of the Unit

This unit of competency supports the work of demolition project management staff responsible for regulatory compliance and minimising environmental contamination and public health and safety impacts on structures or installations above 15 metres.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to demolition work in different States and Territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Assess potential impacts of demolition tasks.	1.1	Environmental and public health and safety compliance requirements for the demolition site and geographic locality are determined.
		1.2	Safe work method statements (SWMS) for individual demolition tasks are reviewed and potential ***impacts on environment*** are determined.
		1.3	Safe work method statements for individual demolition tasks are reviewed and potential ***impacts on public health and safety*** are determined.
2	Identify measures to minimise impacts of demolition work on the environment.	2.1	Strategies to minimise impacts on air quality are investigated, selected and incorporated into procedures.
		2.2	Strategies to minimise water wastage and impacts on stormwater are investigated, selected and incorporated into procedures.
		2.3	Strategies to minimise energy wastage and employ renewable energy technologies are investigated, selected and incorporated into procedures.
		2.4	Strategies to minimise material wastage and to ensure safe disposal of hazardous and waste materials are investigated, selected and incorporated into procedures.

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3	Identify measures to minimise impacts of demolition work on the public.	3.1	Site containment, exclusion and signage strategies are reviewed and amended to maximise awareness of, and minimise impacts on, the public.
		3.2	Pedestrian and traffic management plan for site and site perimeter is reviewed and amended to minimise risks to the public.
		3.3	Fall prevention strategies for both personnel and materials are reviewed and amended to minimise risks to site personnel and the public.
		3.4	Noise, air pollution and vibration management strategies are reviewed and amended to minimise impact on the public.
4	Brief team and supervise implementation of impact minimisation strategies.	4.1	Strategies for minimising impact of demolition work on the environment and on public health and safety are explained to demolition teams.
		4.2	Amended safe work method statements are distributed and questions invited and responded to, as required.
		4.3	Implementation of strategies to minimise impact of demolition work on the environment and on public health and safety is monitored and directed.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to:
  - respond to change, such as differences in environmental and public health and safety standards required by clients
  - use past experience to develop and implement solutions to problems
- numeracy skills to calculate or estimate:
  - energy use
  - predicted volume of waste
- oral communication skills to:
  - motivate and direct team members
  - develop and maintain relationships with clients and other relevant personnel
- reading skills to interpret work specifications
- writing skills to amend work procedures and safe work method statements

Required knowledge

- demolition procedures, techniques and safety requirements
- demolition site inspection procedures
- environmental and public health and safety hazards and risks existing or arising on demolition sites, and relevant risk management strategies
- legislation, regulations, codes and standards relating to environmental and public health and safety on demolition sites
- plant, tools and equipment required for demolition tasks and:
  - permits and licences required
  - safe operating procedures
- project management strategies
- quality management strategies
- strategies to minimise environmental and public health and safety risks on and around demolition sites
- team leadership strategies

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by reviewing the planning of demolition activities to minimise environmental and public health and safety impacts, and observing the supervision of the implementation of planned strategies in the workplace.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to plan and supervise the implementation of strategies to minimise environmental and public health and safety impacts on two different large demolition projects, one of which must involve structures or installations above 15 metres. The evidence shall demonstrate:

- analysing potential impacts of demolition activities on the environment and on public health and safety
- interpreting and applying legislation, regulations, codes and standards relating to protecting the environment and public health and safety
- researching and developing strategies to minimise impacts of demolition activities on the environment and on public health and safety
- monitoring demolition activities to ensure effective implementation of planned strategies.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure
- realistic tasks covering the mandatory task requirements
- support materials appropriate to activity, including:
  - access to industry information relating to legislation, regulations, codes and standards
  - contractual information and work specifications
- human resources and plant, tools and equipment appropriate to the tasks.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the following methods:

- direct observation of tasks in real work conditions
- questioning to confirm the ability to consistently identify and

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correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing managers or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Impacts on the environment must include:

- dust
- energy use
- excavation
- hazardous material
- material disposal
- sediment
- storage
- stormwater quality
- water use.

Impacts on public health and safety must include:

- air pollution relating to:
  - dust
  - fumes
  - smell
- change or damage to public infrastructure
- hours of work
- noise
- vehicle movements
- vibration
- volume of traffic.

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Unit Sector(s)

Demolition

Custom Content Section

Not applicable.

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CPCCDE4003A Supervise individual activities on demolition sites

Modification History

New unit.
This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

Unit Descriptor

This unit of competency specifies the outcomes required to monitor and direct demolition activities on large demolition projects, including structures or installations above 15 metres and on different types of sites to ensure that projects are completed within required timeframe and to specifications. It includes overseeing preparation for demolition work, reviewing safe work methods prior to task commencement, monitoring and directing team members throughout task completion, and overseeing site clean-up activities.

Application of the Unit

This unit of competency supports the role of demolition supervisors who lead and manage team members to complete different demolition activities on different types of sites, and on structures or installations above 15 metres.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to demolition work in different States and Territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Supervise preparation for demolition work.	1.1	***Permit applications*** for different tasks are processed and confirmed as compliant prior to starting work.
		1.2	Work instructions for individual ***demolition tasks*** are communicated to team members and questions invited and addressed.
		1.3	Team member understanding of work health and safety (WHS) and environmental requirements is confirmed.
		1.4	Team members' selection of plant, tools and equipment is confirmed as consistent with job requirements.
		1.5	Reported plant, tool and equipment faults are processed according to workplace and WHS requirements and replacements are sourced as required.
		1.6	Team members' manual handling and placement of plant, tools and equipment at the site are monitored and directed to ensure safety and efficiency.
2	Monitor and manage tasks and procedures.	2.1	Work sites for individual demolition tasks are inspected, and risks and hazards reviewed in conjunction with team members.
		2.2	Safe work method statements (SWMS) for individual tasks are reviewed with team members and adjustments made in consultation with relevant WHS personnel according to issues raised and site conditions observed, as required.
		2.3	Weather conditions and contingencies are monitored and resources directed as required to ensure safety, quality

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			and timeliness of demolition task completion.
		2.4	Progress of work and procedures used by team members are monitored and directed to minimise risks on site and impacts on public health and safety and the environment.
		2.5	Work is stopped when previously undiscovered hazards arise, work site is cleared, and site and safe work method are re-assessed in consultation with relevant personnel.
		2.6	Completed work is checked for compliance with work plans and specification, discrepancies are identified, and resources are directed to make adjustments as required.
3	Supervise site clean-up.	3.1	Removal and storage or disposal of plant, tools, equipment materials and waste are monitored and directed to ensure compliance with workplace, safety and environmental requirements.
		3.2	Team members are debriefed and opportunities for learning identified and actioned as required.
		3.3	Project documentation is completed and processed according to workplace and project requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to:
  - assimilate past experience to develop and implement solutions to problems
  - respond to change, such as differences in quality standards required by clients
- numeracy skills to interpret and confirm measurements for demolition tasks from plans and specifications
- oral communication skills to:
  - motivate and direct team members
  - develop and maintain relationships with clients and other relevant personnel
- reading skills to interpret work specifications
- writing skills to amend safe work method statements

Required knowledge

- contract management strategies
- customer service strategies
- demolition procedures, techniques and safety requirements
- demolition site inspection procedures
- hazards and risks existing or arising on demolition sites and relevant risk management strategies
- legislation, regulations, codes and standards relating to demolition
- plant, tools and equipment required for demolition tasks, including:
  - permits and licences required
  - safe operating procedures
- project management strategies
- quality management strategies
- team leadership strategies

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by observation of the finalisation of demolition activities and supervision of property handover in the workplace.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to supervise demolition activities on two different large demolition projects, one of which must involve structures or installations above 15 metres, up to the stage where all structures have been demolished, including underground structures. The person should demonstrate the ability to:

- interpret and apply:
  - contractual requirements
  - legislation, regulations, codes and standards relevant to different demolition tasks and processes, including WHS, environmental and quality requirements
- monitor and manage demolition activities to ensure:
  - efficient use of resources
  - timely completion of tasks to required standards
- motivate and direct team members to ensure timely completion of tasks to required standards
- inspect and monitor site for existing and arising hazards and risks, and implement relevant risk management strategies
- complete relevant project documentation.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure
- realistic tasks covering the mandatory task requirements
- support materials appropriate to activity, including:
  - access to industry information relating to legislation, regulations, codes and standards
  - contractual information and work specifications
- human resources and plant, tools and equipment appropriate to the tasks.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the

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following methods:

- direct observation of tasks in real work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing managers or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Permit applications must include:

- building (demolition)
- hoarding
- hot work
- protection of assets
- temporary fencing.

Demolition tasks must include:

- manual demolition of:
  - floors
  - frame
  - roofs
  - structural members
  - walls
- mechanical demolition, including work on suspended floors
- induced collapse
- tasks involving special conditions or requirements, such as:
  - arched roofs, domes, masonry and brick arches

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- basements, cellars and vaults
- chimneys and spires
- facade retention
- lift shafts
- pre- and post-tensioned concrete
- precast concrete panels
- pylons and masts
- storage tanks and pipelines
- structurally unsound buildings or structures.

Unit Sector(s)

Demolition

Custom Content Section

Not applicable.

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CPCCDE4004A Finalise demolition activities and supervise property handover

Modification History

New unit.
This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

Unit Descriptor

This unit of competency specifies the outcomes required to ensure that large demolition projects, including structures or installations above 15 metres on different types of sites are completed within the required timeframe and to specifications, with agreed alterations to specified work clearly recorded.
It includes ensuring that the property is handed over to the owner or their nominated representative within projected timeframes and that relevant documentation is completed and processed.

Application of the Unit

This unit of competency supports the role of demolition supervisors who manage the final stages of large demolition projects, including those involving structures and installations over 15 metres on different types of sites, from the stage where all of the structures on the site, including underground structures, have been demolished, up to the handover of the site.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to demolition work in different States and Territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan handover of property.	1.1	Information relating to demolition contract is reviewed to confirm timelines for completion and site handover specifications.
		1.2	Handover process is confirmed and scheduled with relevant stakeholders and required amendments to timeframes or handover specifications are negotiated and recorded.
		1.3	***Demolition finalisation tasks*** are confirmed and scheduled, and ***resources*** required are assessed and arranged according to workplace and site requirements.
		1.4	Work health and safety (WHS) requirements are determined and applied to task planning according to safety plans and policies.
		1.5	Environmental requirements are identified for the project according to environmental plans and regulatory obligations.
		1.6	Demolition team is briefed and demolition finalisation tasks are allocated and confirmed as understood by team members according to workplace procedures.

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2	Monitor quality and timeliness of job completion.	2.1	Audit of property is conducted to determine condition of work site and surrounds before initiating demolition finalisation tasks, and safe work method statements (SWMS) are adjusted in consultation with relevant personnel, as required.
		2.2	Scheduled tasks are started within required timeframes and progress is monitored to completion to ensure deadlines are met.
		2.3	Hazard control and ***regulatory compliance*** are monitored throughout the finalisation process and team members are directed to use specific procedures or techniques, as necessary.
		2.4	Completed tasks are assessed against specifications; and discrepancies are noted and resolved or recorded in relevant documentation.
		2.5	Property is inspected and checked against finalisation schedule and quality requirements; and discrepancies are identified, and resolved or recorded in relevant documentation.
3	Conduct handover site inspection with stakeholders.	3.1	Handover site inspection appointment is confirmed with property owner or authorised representatives and other relevant personnel, as required.
		3.2	Procedures and required documentation for handover site inspection are confirmed with stakeholders.
		3.3	Records relating to completed demolition work are reviewed and agreed variations to initial specifications are recorded or confirmed in completion documentation.
		3.4	Site safety inspection is conducted and site safety induction arranged or delivered to stakeholders prior to handover site inspection.
		3.5	Sections of site are inspected according to handover site inspection schedule and signed off as complete; or discrepancies are discussed and solutions negotiated and recorded.

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4	Finalise work and complete handover documentation.	4.1	Solutions to discrepancies discovered on handover site inspection are implemented according to negotiated schedule and monitored and checked for completion to required standard.
		4.2	Site clearance is supervised and checked to ensure all plant, tools, equipment, materials and waste are removed and ground prepared according to agreed standard.
		4.3	Final documentation is prepared and processed according to project and workplace requirements.
		4.4	Site is secured according to project and workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to:
  - assimilate past experience to develop and implement solutions to problems
  - respond to change, such as differences in quality standards required by clients
- numeracy skills to:
  - calculate resource requirements
  - schedule tasks
- oral communication skills to:
  - conduct team briefings and direct staff
  - develop and maintain relationships with clients and other relevant personnel
- reading skills to interpret contractual documentation
- writing skills to prepare project finalisation documentation, such as site handover documents

Required knowledge

- contract management strategies
- customer service strategies
- demolition procedures, techniques and safety requirements
- demolition site audit procedures
- hazards and risks existing or arising on demolition sites and relevant risk management strategies
- legislation, regulations, codes and standards relating to relating to the finalisation of demolition tasks and handing over the property
- plant, tools and equipment required for demolition tasks, including:
  - permits and licences required
  - safe operating procedures
- project management strategies
- quality management strategies
- team leadership strategies

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by observation of the finalisation of demolition activities and supervision of property handover in the workplace.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to oversee the finalisation of two different large demolition projects, one of which must include structures or installations above 15 metres, from the stage where all structures have been demolished, including underground structures, and up to satisfactory handover of the site to the client or their representative. The person should demonstrate the ability to:

- interpret and apply:
  - contractual requirements
  - relevant legislation, regulations, codes and standards including WHS, environmental and quality requirements relevant to the finalisation of demolition tasks and property handover
- plan demolition finalisation tasks to ensure:
  - efficient use of resources
  - timely completion of tasks to required standards
- brief and direct team members to ensure timely completion of tasks to required standards
- audit and monitor site for existing and arising hazards and risks and implement relevant risk management strategies
- liaise with client and relevant stakeholders to build and maintain relationships and facilitate timely completion of project
- prepare relevant documentation for property handover.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure
- realistic tasks covering the mandatory task requirements
- support materials appropriate to activity, including:
  - access to industry information relating to legislation, regulations, codes and standards

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- contractual information and work specifications
- human resources and plant, tools and equipment appropriate to the tasks.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the following methods:

- direct observation of tasks in real work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing managers or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Demolition finalisation tasks:

- must include:
  - removal of materials and waste
  - site containment and security
  - site levelling
- may include:
  - soil remediation.

Resources must include:

- equipment
- human resources, including personnel with:
  - specialised skills
  - licences to operate plant and equipment

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- materials
- plant
- tools.

Regulatory compliance requirements must include:

- permits and licences for different tasks
- noise limitations
- lighting requirements
- traffic movement requirements.

Unit Sector(s)

Demolition

Custom Content Section

Not applicable.

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CPCCDO2011A Handle and use dogging tools and equipment

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to move, locate and store dogging equipment and use associated tools; assist project planning and ensure OHS requirements.

The unit includes delivery, selection, positioning and maintenance of dogging tools and equipment.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to use dogging tools and equipment.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Tools and equipment selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Materials quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Handle, sort and stack dogging equipment and associated tools.	2.1. Tools are safely and effectively used according to manufacturer recommendations and state or territory OHS requirements. 2.2. ***Dogging equipment*** is identified and checked for conformity to the materials schedule, plans and specifications. 2.3. Dogging equipment is moved to specified location, applying safe manual handling techniques. 2.4. Dogging equipment is sorted to suit material type and size, and stacked for ease of identification and retrieval for task sequence and job location in accordance with job specifications. 2.5. Dogging equipment and associated tools are protected against physical and water damage and stored clear of access ways for ease of identification, retrieval and distribution.
3. Prepare for mechanical handling of materials.	3.1. Dogging equipment is ***stacked*** /banded for mechanical handling in accordance with the type of material and plant or equipment to be used. 3.2. Dogging equipment is loaded, unloaded, moved or located at specified location assisting the forklift

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ELEMENT	PERFORMANCE CRITERIA
	driver, rigger and dogman.
	3.3. Dogging equipment and tools are safely ***handled*** with mechanical lifting devices.
4. Clean up.	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	4.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- evaluating own actions and making judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- recognising procedures, following instructions, responding to change and contributing to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- teamwork skills to coordinate own work with others to action tasks and relate to

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REQUIRED SKILLS AND KNOWLEDGE

people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities

- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- crane operations
- designs and functions of lifting equipment
- dogging equipment
- dogging handling techniques
- general construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- relevant Acts, regulations and codes of practice
- safe working load tags
- signalling methods
- types, characteristics, uses and limitations of plant, tools and equipment
- workplace and equipment safety requirements.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and

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EVIDENCE GUIDE

	procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures including quality requirements • safely and effectively operate and use tools, plant and equipment • communicate and work effectively and safely with others • safely handle dogging equipment and associated tools for all mandatory equipment and tools specified in the range statement.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with

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EVIDENCE GUIDE

	disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge • all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed. Supplementary evidence of competency may be

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EVIDENCE GUIDE

	obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:	• diagrams or sketches • instructions issued by authorised organisational or external personnel • manufacturer specifications and instructions, where specified • MSDS • memos • regulatory and legislative requirements pertaining to handling and using dogging tools and equipment • relevant Australian standards • safe work procedures relating to handling and using dogging tools and equipment • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.
Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation

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RANGE STATEMENT

project safety plan and may include:	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Quality requirements include:	• internal company quality policy and standards • manufacturer specifications, where specified • relevant regulations, including Australian standards • workplace operations and procedures.
Environmental requirements include:	• clean-up management • noise • vibration • waste management.

Dogging equipment:	• includes:
	  • single leg slings
	  • four leg slings

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RANGE STATEMENT

	• chain slings
	• synthetic webbing slings
	• two leg sling
	• brick cages
	• chocks and wedges
	• flexible steel wire rope
	• kibbles
	• natural ropes
	• packers
	• personnel box
	• rigging screws
	• rubbish bins
	• shackles and eye bolts
	• spreader beams
	• turn buckles
	• whistles
	• may include:
	  • cantilevered crane loading platforms
	  • perimeter safety screens and shutters
	  • rescue boxes
	  • two-way radios.

Stacking and storage include:	• banding • pallets • stillage.
Handling methods for dogging equipment include:	• manual handling • assisting the forklift driver, rigger and dogman • basic mechanical lifting devices • slings.

Unit Sector(s)

Unit sector Construction

Co-requisite units

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Co-requisite units Nil

Functional area

Functional area

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CPCCDO3011A Perform dogging

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to undertake basic dogging work, both in sight and out of sight of the crane operator, for the purpose of shifting loads mechanically.

The unit includes selecting sling types and sizes and maintaining the stability of the load.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to use dogging tools and equipment, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Materials quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Select dogging equipment.	2.1. Resources, materials and equipment are selected and inspected for compliance with job specifications. 2.2. Job sequencing schedule is communicated with team members and others to ensure coordination. 2.3. Load mass is ***calculated*** and confirmed using load charts and standard calculations. 2.4. Loads in ***slings*** and equipment are calculated to suit job requirements.
3. Sling loads.	3.1. ***Lifting devices*** are assembled and erected for the movement of load. 3.2. Using appropriate ***load slinging method***, loads are slung to ***crane*** ready for lifting.
4. Shift loads.	4.1. Loads are shifted ensuring stability and in compliance with work method statement. 4.2. Load is directed to landing position using communications in compliance with Australian standards and recognised work practices. 4.3. Load is landed in required position on packing or bearers.
5. Remove dogging	5.1. Load shifting equipment is dismantled and inspected

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ELEMENT	PERFORMANCE CRITERIA
equipment.	for wear. 5.2. Logbook and site records are completed to company requirements.
6. Clean up.	6.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 6.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices. 6.3. Work completion procedures are applied and relevant personnel notified that work is finished.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- evaluating own actions and making judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- recognising procedures, following instructions, responding to change and contributing to workplace responsibilities, such as current work site environmental

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REQUIRED SKILLS AND KNOWLEDGE

and sustainability frameworks or management systems

- teamwork skills to coordinate own work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- crane operations and limitations
- designs and functions of lifting equipment
- dogging equipment
- dogging techniques
- elevated work platforms
- general construction terminology
- job safety analysis (JSA) and safe work method statements
- logbooks
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- relevant Acts, regulations and codes of practice
- safe working at heights and fall arrest
- safe working load tags
- signalling methods and communications
- types, characteristics, uses and limitations of plant, tools and equipment
- weather and ground considerations
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to:
	• locate, interpret and apply relevant information, standards and specifications
	• comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
	• comply with organisational policies and procedures including quality requirements
	• safely and effectively operate and use tools, plant and equipment
	• communicate and work effectively and safely with others
	• as a minimum, read tags, sling, load, direct and land loads in conjunction with a slewing mobile crane with a telescopic boom and a winch, out of sight for:
	  • rigid heavy loads to two thirds capacity of the crane
	  • luff movements, boom retract and boom extend, slew right and slew left, winch up and down in combination
	  • a flexible load with a minimum of three lifting points
	  • using hand signals and whistle from minimum radius to maximum radius.

Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements

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EVIDENCE GUIDE

and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

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EVIDENCE GUIDE

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions,

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RANGE STATEMENT

	where specified • MSDS • memos • regulatory and legislative requirements pertaining to performing dogging • relevant Australian standards • safe work procedures relating to performing dogging • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public

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RANGE STATEMENT

	• working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• brick cages • kibbles • personnel cages • rescue cages • rubbish bins • spreader bars and beams.
Quality requirements include:	• internal company quality policy and standards • manufacturer specifications, where specified • relevant regulations, including Australian standards • workplace operations and procedures.
Environmental requirements include:	• clean-up management • noise • vibration • waste management.
Calculations include:	• delivery dockets • load charts • load share • pre-cast compliance charts • safe working loads • standard calculations.
Slings include:	• chain • flexible steel wire rope • natural or synthetic fibre.

Lifting devices:	• include:
	  • eye bolts
	  • lifting clutches
	  • shackles
	  • snatch blocks
	  • tags
	• may include:
	  • collared eye bolts

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RANGE STATEMENT

	• equalizing sheaves • lifting lugs • rigging screws • turn buckles.
Load slinging methods include:	• straight sling • adjustable sling • reeved sling • inclined sling.
Cranes include:	• fixed cranes • hydraulic mobile cranes • lattice boom mobile cranes • slewing cranes • tower cranes.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCDO3012A Perform crane scheduling

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to schedule dogging operations to ensure safe, efficient and effective use of the crane within the overall daily site plan and operations.

The unit includes coordinating and prioritising loads for the various construction elements of a project.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to perform crane scheduling, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. ***Signage*** and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Materials quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Interact with crane crew.	2.1. ***Job sequencing schedule*** is prepared so that it enhances the work method statement and job safety analysis (JSA). 2.2. Job sequencing schedule is communicated with crane crew. 2.3. Work is coordinated and modified as other on-site activities progress or are modified. 2.4. ***Crane*** driver is advised of changes to lifting schedule when a change is required or as requested by management. 2.5. Changes to job sequencing schedule are recorded as per site requirements.
3. Communicate with site members.	3.1. Team members and others are communicated with to ensure coordination requirements. 3.2. Contingency plans are discussed among team members. 3.3. Team members are advised of changes to lifting schedule when a change is required or as requested by management.
4. Clean up.	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation,

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ELEMENT	PERFORMANCE CRITERIA
	regulations, codes of practice and job specification. 4.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices. 4.3. Work completion procedures are applied and relevant personnel notified that work is finished.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- evaluating own actions and making judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- recognising procedures, following instructions, responding to change and contributing to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- teamwork skills to coordinate own work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:

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REQUIRED SKILLS AND KNOWLEDGE

- use a range of mobile technology, such as two-way radio and mobile phones
- voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- construction processes
- crane operations and limitations
- crane scheduling techniques
- critical path analysis
- designs and functions of lifting equipment
- general construction terminology
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- relevant Acts, regulations and codes of practice
- JSA and safe work method statements
- sequencing and order of lifts
- signalling methods and communications
- types, characteristics, uses and limitations of plant, tools and equipment
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- interpret and estimate load sizes (dimension and mass) and follow project drawings, scheduling the correct sequence of lifts for a project, for a minimum of three trades and to job specifications.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the

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EVIDENCE GUIDE

	mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at

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EVIDENCE GUIDE

the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to performing crane scheduling
- relevant Australian standards
- safe work procedures relating to performing crane scheduling
- signage

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RANGE STATEMENT

	• verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Traffic control ***signage*** includes:	• highway traffic signs • site safety signage

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RANGE STATEMENT

	• temporary signage for the benefit of motorists and pedestrians • traffic conditions signage.
Tools and equipment include:	• two-way radios.
Quality requirements include:	• internal company quality policy and standards • manufacturer specifications, where specified • relevant regulations, including Australian standards • workplace operations and procedures.
Environmental requirements include:	• clean-up management • noise • vibration • waste management.
Job sequencing schedule includes:	• building and construction procedures (e.g. concreting, steel fixing, carpentry and rigging) • procedures with JSA and safe work method statements.
Cranes include:	• fixed cranes • gantry cranes • hydraulic mobile cranes • lattice boom mobile cranes • non slewing cranes • slewing cranes • tower cranes.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCJN2001A Assemble components

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit specifies the outcomes required to assemble manufactured components to form a completed constructed unit.

Application of the Unit

Application of the unit This unit of competency supports the achievement of skills and knowledge to assemble components, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate ***assembled units*** are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2. Assemble and hold components in place.	2.1. Component parts are identified for location in assembly and knockdown fittings are prepared and located for assembly. 2.2. Adhesive is applied, where applicable, to specification. 2.3. Components are located and held in their assembled positions to design specifications.
3. Secure assembled components.	3.1. Frame or unit is secured by appropriate ***assembly methods***. 3.2. Fastened joints are secured by fasteners or knockdown fittings, using appropriate tools to specification or as appropriate. 3.3. Plated joints are secured by placement and pneumatic hammer or press of gangnail plates to specification or as appropriate. 3.4. Weld joints are prepared for welding.
4. Clean up.	4.1. Assembly and holding system is dismantled carefully. 4.2. Waste material is disposed of safely and reusable

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ELEMENT	PERFORMANCE CRITERIA
	material is stored/stacked. 4.3. Tools and equipment are cleaned, maintained and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret drawings and specifications
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply measurements
- planning and organisational skills to identify requirements, apply relevant resources and sequence tasks
- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- interpretation of drawings and specifications
- job safety analysis (JSA) and safe work method statements
- manufacturing and assembly processes in constructing componentry units
- measuring and marking processes and techniques related to assembling units

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REQUIRED SKILLS AND KNOWLEDGE

- temporary bracing techniques
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to prepare components and assemble at least one of the assembled unit types listed in the range statement, providing evidence of the ability to: • comply with OHS regulations applicable to workplace operations • comply with organisational policies and procedures, including quality assurance requirements within the context of assembling units • select and use appropriate processes, tools and equipment to carry out tasks • indicate visual checking of component parts to ensure right part and right location • select and use appropriate packing material for protection of surfaces during assembly • select and apply effective methods of holding components together in an assembly process • demonstrate sound procedures to ensure joints are closed and true and assembly is square and out of winding • display sound and safe procedures to fix or secure joints.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory

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EVIDENCE GUIDE

	or Australian standards' requirements. Resource implications for assessment include: • work area appropriate to task • working drawings and specifications relevant to task • procedure documents appropriate to manufacturing processes • tools, plant and equipment relevant to manufacture process • material appropriate to proposed project activity. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with

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EVIDENCE GUIDE

a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining assembling components
- relevant Australian standards
- safe work procedures relating to assembling components

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RANGE STATEMENT

	• signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment include:	• air compressor and hoses • chisels • hammers • measuring tapes and rules • nail guns • spirit levels • squares.
Quality requirements include:	• control of handling procedures

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RANGE STATEMENT

	• quality of materials
	• relevant regulations, including:
	  • Australian standards
	  • internal company quality policy and standards
	  • manufacturer specifications where specified
	  • workplace operations and procedures.

Materials include:	• aluminium • timber.
Assembled units include:	• door and window frames • doors • fitments, including cupboards, counters, shelving and robes • grills • louvres • relocatable structures • roof trusses • shopfronts • stairs • wall frames • window sashes.
Environmental requirements include:	• clean-up management • dust and noise • stormwater protection • waste management.
Statutory and regulatory authority includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Assembly methods may involve:	• clamps • cramps • packers and wedges • platform or frame jigs • presses.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCJN2002B Prepare for off-site manufacturing process

Modification History

This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

- Minor changes in required knowledge and range statement
- Other minor editorial changes

Equivalent to CPCCJN2002A Prepare for off-site manufacturing process

Unit Descriptor

This unit specifies the outcomes required to prepare material for the manufacturing process and assemble components to form manufactured units.

Application of the Unit

This unit of competency supports the achievement of skills and knowledge to prepare for the off-site manufacturing process, which may include working with others and as a member of a team.

Licensing/Regulatory Information

No licensing, legislative and regulatory requirements apply to this unit at the time of endorsement.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes.
		1.2	***Work health and safety (WHS)*** requirements are followed in accordance with safety plans and policies.
		1.3	Signage and barricade requirements are identified and implemented.
		1.4	***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement.
		1.5	Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
		1.6	***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
		1.7	***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2	Identify, select and prepare materials for use in the off-site production	2.1	Materials are identified and selected as suitable for off-site production of components.
		2.2	***Fixings and fasteners,*** adhesives and sealants are identified and selected appropriate to manufacturing

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	process.		process and are used to manufacturer specifications and safety data sheets (SDS) data.
		2.3	Material acquisition and ***preparation techniques*** are identified and used as appropriate.
3	Identify fabricated components and method of assembly	3.1	Types of ***component parts*** are identified from working drawings and specifications.
		3.2	Terminology and dimension limitations specified by standards governing design are referenced and able to be identified.
		3.3	Processes are identified for manufacture, assembly and joining techniques and components.
4	Process for manufacture, assembly, fabrication and sequencing is monitored.	4.1	Space requirements for preparation of ***manufactured units or products*** are identified and located.
		4.2	Component parts are acquired and checked for accuracy, quality and suitability according to plans, drawings and specification.
		4.3	Assembling process is identified according to sequential order of events.
		4.4	Typical common faults in product and/or process problems and appropriate remedial actions are identified according to set workplace operating procedures.
5	Clean up.	5.1	Unused materials are recycled or returned to store.
		5.2	Tools, equipment and plant are cleaned, maintained and stored and work area is cleaned and waste disposed of safely.
		5.3	Packaging/handling technique and methods of protecting material edge and surface are used.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret drawings
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply measurements
- planning and organisational skills to identify requirements, apply relevant resources and sequence tasks
- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- National Construction Code (NCC) and relevant Australian standards
- construction materials and their characteristics
- fasteners and fixings relevant to unit assembly processes
- interpretation of workshop drawings and specifications
- job safety analysis (JSA) and safe work method statements
- measurement and calculation processes relevant to manufacturing work
- types and uses of static machines
- types of adhesives relevant to unit assembly processes
- types of construction material and component manufacturing processes
- workplace and safety requirements.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to prepare materials and components for manufacture and assembly of at least one of the manufactured units or products listed in the range statement, providing evidence of the ability to:

- comply with WHS regulations applicable to workplace operations
- comply with organisational policies and procedures, including quality assurance requirements within the context of preparation of materials
- indicate a clear understanding of construction requirements of maximum and minimum dimension standards and governing authority, where applicable
- adopt and use sound techniques to identify material requirements, including allowances for joints
- indicate a clear understanding of joining methods and method of assembly of unit
- select and use appropriate processes, tools and equipment to carry out tasks
- demonstrate sound techniques in the selection and handling of material for components
- demonstrate sound techniques in handling and storing materials to ensure surfaces and edges are protected
- demonstrate sound and safe techniques to prepare

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material for manufacturing process
- communicate with others to ensure safe and effective workplace operations.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- work area appropriate to task
- working drawings and specifications relevant to task
- procedure documents appropriate to manufacturing processes
- tools, plant and equipment relevant to manufacture process
- materials appropriate to proposed project activity.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments.

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Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- memos
- regulatory and legislative requirements pertaining preparing for an off-site manufacturing process
- relevant Australian standards
- safe work procedures relating to preparing for an

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	off-site manufacturing process • SDS • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Work health and safety is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of lifting equipment
	• use of machines
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment include:	• angle grinders • bevels • bolt-cutters • buzzers

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- circular saws
- compressors
- docking saws
- drop saws
- guillotines
- hammers
- measuring tapes
- metal cutting saws
- overhead/pendant cranes and forklifts
- squares
- thicknessers
- trolleys
- wire cutters.

Quality requirements include:

- control of handling procedures
- cutting and dressing procedures
- quality of materials
- relevant regulations, including:
  - internal company quality policy and standards
  - manufacturer specifications where specified
  - National Construction Code
  - relevant Australian standards
  - workplace operations and procedures
- use and maintenance of equipment
- workplace operations and procedures.

Materials include:

- aluminium
- laminated material
- medium density fibreboard (MDF)
- metallic and non-metallic materials
- plastic with solid core
- plywood
- timber
- veneered particleboard and sheeting.

Environmental requirements include:

- clean-up management
- dust and noise
- stormwater protection
- waste management.

Statutory and regulatory authority includes:

- federal, state and local authorities administering applicable Acts, regulations and codes of practice.

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Fixings and fasteners include:

- nail plates
- nails
- nuts and bolts
- screws.

Preparation techniques include:

- cutting to length
- dressing to dimensional size
- marking for identification
- ripping to size
- stacking.

Component parts include:

- balusters
- bearers
- handrailing
- joists
- multiple railing
- newels
- risers
- strings
- treads.

Manufactured units or products include:

- doors
- fitments
- prefabricated framework
- shopfronts
- stairs
- windows.

Unit Sector(s)

Construction

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Custom Content Section

Not applicable.

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CPCCJN2003A Package manufactured products for transport

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit specifies the outcomes required to use appropriate types of packaging systems to protect finished products from damage during transportation.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills and knowledge to package manufactured products for transport, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for planning and preparation purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Tools and equipment selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials to be packaged*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2. Identify and select appropriate packaging.	2.1. ***Packaging materials*** are selected to supervisor's instructions and job specification. 2.2. Wrapping, enclosing and packaging techniques are identified. 2.3. Special items in bulk, finish or value are identified for special packaging requirements.
3. Prepare for handling and transporting manufactured products.	3.1. ***Packaging processes*** are carried out to enclose and protect item or unit for handling and transporting. 3.2. Loose packaging, such as cover sheets and packaging cushions, is selected for transporting.
4. Undertake appropriate handling and transporting techniques for manufactured products.	4.1. Special packaging, if required, is obtained and used. 4.2. Packaged units are covered for transportation. 4.3. Loaded units are packed and secured for transportation.
5. Clean up.	5.1. Area is cleaned and waste material removed. 5.2. Tools and equipment are cleaned, maintained and stored.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply measurements and calculations
- planning and organisational skills to identify requirements, apply relevant resources and sequence tasks
- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- basic packaging techniques
- construction products and their protection requirements
- materials handling related to work orientation
- measurement and calculations related to packaging products
- organisation's quality assurance requirements
- transporting techniques
- types of packaging materials and packaging systems
- workplace safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to load and package products for transportation, providing evidence of the ability to: • comply with OHS regulations applicable to workplace operations • comply with organisational policies and procedures, including quality assurance requirements within the context of protecting finished products • select and use appropriate handling techniques to minimise opportunity of damage to material surface • demonstrate safe and effective application of at least two types of packaging processes of products • adopt and apply effective loose packaging to packaged material for transportation • identify typical faults and problems that occur and action required to rectify them • communicate with others to ensure safe and effective workplace operations.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements.

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EVIDENCE GUIDE

Resource implications for assessment include:

- packaging systems appropriate to proposed tasks
- workplace operations
- tools and equipment relevant to proposed activities
- finished products
- packaging and packing materials.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability

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EVIDENCE GUIDE

and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to packaging manufactured products for transport
- relevant Australian standards
- safe work procedures relating to packaging manufactured products for transport
- signage
- verbal, written and graphical instructions

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RANGE STATEMENT

	• work bulletins • work schedules, plans and specifications.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Quality requirements include:	• control of handling procedures • packaging and protection of products • quality of materials • use and maintenance of equipment • workplace operations and procedures.
Materials to be packaged include:	• aluminium • glass • steel • stone • timber.
Environmental requirements include:	• clean-up management • dust and noise • stormwater protection • waste management.
Statutory and regulatory	• federal, state and local authorities

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RANGE STATEMENT

authority includes:	administering applicable Acts, regulations and codes of practice.
Packaging materials include:	• bubble wrap • pallet wrapping • polystyrene foam moulding • shrink packaging • stretch wrap.
Packaging processes include:	• banding applied to stacks/bundles to maintain stack stability • boxes/crates constructed to enclose and protect unit or components • separation packing applied to stacked or bundled components • vacuum sealing applied to stacks, bundles or units to designed packaging process.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCJN3001A Use static machines

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit specifies the outcomes required to use static machines, which are those fixed to a set location for their operation, as applies with off-site manufacturing processes.

Application of the Unit

Application of the unit This unit of competency supports the achievement of skills and knowledge to use static machines, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2. Identify static machines, their operation and safety requirements.	2.1. Types and functions of ***static machines*** are identified for use in off-site production. 2.2. Method of operation of machines is identified in accordance with manufacturer's operating manual. 2.3. OHS requirements for guard attachment and cut-off switches are identified. 2.4. OHS requirements for personal protective equipment (PPE) associated with using machines are identified and used. 2.5. Quality assurance requirements of organisation's machining operations are recognised and adhered to.
3. Prepare machine for use.	3.1. Particular safety requirements for preparing and using static machines are recognised and adhered to. 3.2. Appropriate PPE is selected, correctly fitted and used. 3.3. Machine is set up to required operating process and setting with fences/guides locked to position in accordance with standard operating procedures.
4. Operate machine.	4.1. Machine start-up procedure is carried out to

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ELEMENT	PERFORMANCE CRITERIA
	manufacturer recommendations.
	4.2. Material is fed to machine, where applicable, in accordance with manufacturer recommendations, safe handling procedures and standard operating procedures.
	4.3. Material is set up and held in place, where applicable, for mobile machine and moving table operations in accordance with manufacturer recommendations.
	4.4. Machine is operated in accordance with its designed capacity and purpose and to manufacturer specifications and OHS requirements.
	4.5. Machine shut-down procedure is carried out to manufacturer recommendations and under supervisor's instructions.
5. Maintain machine and attachments.	5.1. Machines are maintained through regular servicing to manufacturer's operating manual.
	5.2. Major faults are identified and reported to responsible supervisor.
	5.3. Minor faults are identified and corrected where applicable, under supervision.
	5.4. Assistance is given when cutters/blades and attachments are fitted and secured to manufacturer specifications, under supervisor's instruction.
6. Clean up.	6.1. Machine is cleaned and waste material disposed of safely under supervisor's instruction.
	6.2. Cutters, blades and attachments are cleaned, checked and stored under supervisor's instruction.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems

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REQUIRED SKILLS AND KNOWLEDGE

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - Australian standards
    - operating manual
    - specifications
    - other relevant documentation
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to workplace requirements
- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- basic maintenance of static machines
- job safety analysis (JSA) and safe work method statements
- materials handling related to working with static machines
- types of static machines and their operation
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to set up three separate types of machines for processing at least one of the materials listed in the range statement, providing evidence of the ability to: • comply with OHS regulations applicable to workplace and machine operations • comply with organisational policies and procedures, including quality assurance requirements within context of carrying out machining operations • identify and appropriately apply manufacturer recommendations in use of machine • identify and correctly apply guarding requirements in operating machine • demonstrate correct setting up procedures for machine operations prior to use • demonstrate correct start-up procedures for operation of machines • demonstrate safe and effective operation of machine • demonstrate correct shut-down and switch-off procedures on completion of machining operation • clean and maintain machine correctly • place or remove cutters and blades safely and correctly.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements

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EVIDENCE GUIDE

and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- workshop location
- access to a range of static machines
- materials appropriate to work orientation of machining operations
- information and specifications of material machining requirements.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances

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EVIDENCE GUIDE

assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to using static machines
- relevant Australian standards
- safe work procedures relating to using static

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RANGE STATEMENT

	machines • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment include:	• brushes • feeler gauges • grease guns • hammers • measuring tapes and rules • oil cans • packers

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RANGE STATEMENT

	• screwdrivers • spanners • spirit levels • squares • wedges.

Quality requirements include:	• attention to specifications of work
	• control of handling procedures
	• quality of materials used in machining operations
	• relevant regulations, including:
	  • Australian standards
	  • internal company quality policy and standards
	  • manufacturer specifications where specified
	  • workplace operations and procedures
	• use and maintenance of machines
	• workplace operations and procedures.

Materials include:	• acrylic or similar materials • glass or similar materials • metal or similar materials • natural soft or hard stone • timber or similar materials.
Environmental requirements include:	• clean-up management • dust and noise • stormwater protection • waste management.
Statutory and regulatory authority includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Static machines include:	• band saws • buzzers (jointer/surface planer) • dimensional saws • docking saws • grinders • mortisers • multi-drill machine • rip saws • table sanders • thicknessers

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RANGE STATEMENT

- travelling beam saws
- vertical and horizontal drills.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCJN3002A Use computer-controlled machinery

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit specifies the outcomes required to program, load and operate computer-controlled machinery for the production of components.

Manufacturing applications are shopfitting, joinery and stair building work.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills and knowledge to use computer-controlled machining processes providing for multiple production process or designed finishes, which may include working with others and as a member of a team.

It does not apply to stonemasonry work or stonemasonry production work.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Tools and equipment selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2. Carry out data input adjustments.	2.1. Programming terms, methods and data storage capacity are determined and stated consistent with job requirements and machine specifications. 2.2. Program is edited to produce straight and circular tool movements, compensating for tool profiles. 2.3. Program is entered.
3. Transfer program to machine control.	3.1. Methods of transferring programs into machine memory are identified and listed. 3.2. Program is loaded into machine memory using appropriate method.
4. Demonstrate operation of the loaded program to control the machine.	4.1. ***Program operations*** are tested through dry run simulation mode, and alarm settings and program are edited where required using the control station. 4.2. Specified work piece is produced using automatic mode as per manufacturer specifications.
5. Clean up.	5.1. Debris and waste materials are removed on completion of process. 5.2. Re-usable and recyclable materials are salvaged and stored.

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ELEMENT	PERFORMANCE CRITERIA
	5.3. Tools and equipment are cleaned, maintained and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret drawings, specifications and job designs
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- basic keyboarding skills
- basic problem and fault-finding skills with software applications
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply workplace requirements
- planning and organisational skills to identify requirements, apply relevant resources and sequence tasks
- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- construction materials and their characteristics
- hardware requirements for relevant software
- job safety analysis (JSA) and safe work method statements

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REQUIRED SKILLS AND KNOWLEDGE

- measuring techniques relevant to dimensions and shape
- range of software applications appropriate to computer numerically-controlled (CNC) equipment
- types and uses of computer-controlled machinery
- types of static machines and machining processes
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to produce two separate components using any of the materials listed in the range statement, providing evidence of the ability to:

- comply with OHS regulations applicable to workplace operations
- select and use appropriate processes, tools and equipment consistent with requirements of activity
- apply organisational quality procedures and processes within the context of operating computer-controlled machinery
- select and correctly apply program opening and shut-down procedures
- demonstrate correct procedures to provide data input to achieve requirements of job
- demonstrate sound procedures with machine operated through a reduced speed dry run to check functions and alarms
- produce products to design in accordance with job specifications and drawings
- communicate with others to ensure safe and effective workplace operations
- identify typical faults and problems that may occur and action required to rectify them.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge

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will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- CNC machinery applicable to proposed activity
- range of cutters, heads and required tools and equipment
- machining projects and specifications relevant to activity
- data and software programs relevant to application activity
- material applicable to activity.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected

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EVIDENCE GUIDE

must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to use computer-controlled machinery

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RANGE STATEMENT

	• relevant Australian standards • safe work procedures relating to use computer-controlled machinery • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Quality requirements include:	• control of handling procedures • procedures for computer controlled production • quality of materials • relevant regulations, including: • Australian standards

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RANGE STATEMENT

	• internal company quality policy and standards • manufacturer specifications where specified • workplace operations and procedures • use and maintenance of equipment • workplace operations and procedures.
Materials include:	• acrylics • medium density fibreboard (MDF) • timber.
Environmental requirements include:	• clean-up management • dust and noise • stormwater protection • waste management.
Statutory and regulatory authority includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Program operations include:	• boring • cutting • cutting and polishing • forming/shaping • milling.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCJN3003A Manufacture components for door and window frames and doors

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit specifies the outcomes required to carry out machining and manufacturing processes to set out component material in preparation for the assembly of window frames, sashes, doors and door frames.

It applies to timber or plastic-covered timber-cored material construction.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills and knowledge to manufacture components for all timber or timber-cored window and door construction, which includes window frames, door frames, sashes, doors and may include working with others and as a member of a team

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements, including the use of ***personal protective equipment***, are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2. Set up machine.	2.1. ***Machines*** to be used and sequence of machining are selected according to machining ***processes*** to be carried out. 2.2. Safety procedures associated with each machine are identified in accordance with manufacturer's operating procedures, OHS requirements and AS1473 Guarding and safe use of woodworking machinery or equivalent. 2.3. Routers/cutters are installed to manufacturer specifications with fences and stops secured in place. 2.4. Guarding is secured in position to manufacturer specifications and AS1473. 2.5. Work area is prepared for machining. 2.6. Components are selected for respective machining processes.
3. Machine components.	3.1. Components are correctly positioned on machine and securely clamped where required. 3.2. Machine is operated to designed operating procedures and AS1473.

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ELEMENT	PERFORMANCE CRITERIA
	3.3. Components are machined accurately to set out lines and template.
	3.4. Process is completed with all components machined to specification and set-out requirements.
4. Clean up.	4.1. Cutters are removed where applicable and machine is left clean.
	4.2. Area and waste are cleared to specification.
	4.3. Components are restored correctly in preparation for assembly.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - drawings and specifications
    - relevant building codes and standards
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to measure and calculate dimensions
- planning and organisational skills to identify requirements, apply relevant resources and sequence tasks
- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and

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REQUIRED SKILLS AND KNOWLEDGE

mental abilities.

Required knowledge

Required knowledge for this unit is:

- AS1473 Guarding and safe use of woodworking machinery
- common material identification marking systems
- component setting out techniques
- job safety analysis (JSA) and safe work method statements
- manufacturing processes for door and window construction
- materials and their characteristics relevant to window and door construction
- measuring techniques relevant to setting up static machines
- setting up processes for static machines
- types and uses of static machines
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to machine components for window and door frames, sashes and panelled doors, providing evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational quality procedures and processes within context of machining components for door and window construction • select appropriate machines to carry out each process • demonstrate safe and accurate setting up of each machine for each process • operate each machine safely and efficiently to produce designed result • demonstrate sound and accurate techniques to produce manufactured components for window and door frames, sashes and a panelled door to set-out design for each component • identify typical faults and problems that occur and action required to rectify them • communicate with others to ensure safe and effective workshop operations.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory

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EVIDENCE GUIDE

	or Australian standards' requirements. Resource implications for assessment include: • workshop location relevant to activity • static machines appropriate for application tasks • tools and equipment appropriate to activity • set out component material for application processes • documentation and reference notation relevant to set-out material. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the

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EVIDENCE GUIDE

point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to manufacturing and assembly of components for door and window frames and doors
- relevant Australian standards
- safe work procedures relating to manufacturing and assembly of components for door and

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RANGE STATEMENT

	window frames and doors • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Personal protective equipment includes:	• boots • caps • dust masks and respirators • ear plugs and muffs • gloves • safety glasses and goggles.
Tools and equipment include:	• chisels

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RANGE STATEMENT

	• clamps • measuring tapes and rules • power routers • squares • trolleys • workbench.

Quality requirements include:	• attention to machining processes
	• relevant regulations, including:
	  • AS1473 Guarding and safe use of woodworking machinery
	  • internal company quality policy and standards
	  • manufacturer specifications where specified
	  • workplace operations and procedures.

Environmental requirements include:	• clean-up management • dust and noise • stormwater protection • waste management.
Statutory and regulatory authority includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Machines suitable for manufacturing processes include:	• bandsaws • buzzers • disk sanders • docking saws • mortisers • spindle shapers • trenchers.
Manufacturing ***processes*** include:	• band sawing for shape • cutting to lengths • dressing material to shape • mortising • moulding material to shape • sanding to curved shape • trenching for housings • trenching for tenons.

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Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCJN3004A Manufacture joinery components

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit specifies the outcomes required to carry out machining and manufacturing processes for component material in preparation for assembling joinery components.

Application of the Unit

Application of the unit This unit of competency supports the achievement of skills and knowledge to manufacture joinery unit components, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** and ***plant*** are selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2. Select and prepare materials for use in joinery production process.	2.1. ***Fasteners***, fixings, adhesives and sealants are identified and selected appropriate to manufacturing process and used to manufacture specifications and material safety data sheet (MSDS) data. 2.2. Materials are identified and selected against characteristic and suitability of production components. 2.3. Material acquisition and ***preparation techniques*** are identified and used, as appropriate. 2.4. Appropriate handling and stacking processes are identified and used.
3. Manufacture components.	3.1. Types of component parts are identified from working drawings and specifications. 3.2. Terminology and dimension limitations specified by standards governing design are referenced and able to be identified. 3.3. ***Processes for manufacture*** and joining techniques and components are identified and used. 3.4. Machines to be used and sequence of machining are selected according to machining processes to be

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ELEMENT	PERFORMANCE CRITERIA
	carried out.
	3.5. Safety procedures for each machine are checked as being in accordance with OHS requirements and AS1473 Guarding and safe use of woodworking machinery.
4. Secure and hold components in place.	4.1. Component parts and knockdown fittings are identified and prepared for location in full component assembly.
	4.2. Adhesive is applied, where applicable, to specification.
	4.3. Components are located and held in their assembled positions to design specifications.
5. Fabricate assembled components.	5.1. Frame or unit is secured by adhesive and cramped to design specification.
	5.2. ***Fastened joints*** are secured by fasteners/knockdown fittings using appropriate tools to specification.
	5.3. Plated joints are secured by placement and pneumatic hammer or press of gangnail plates to specification.
6. Process for manufacture and fabrication sequencing is monitored.	6.1. Space requirements for preparation, manufacture or assembly of product is identified and located.
	6.2. Component parts are acquired and checked for accuracy, quality and suitability according to plans, drawings and specifications.
	6.3. ***Assembling process*** is identified according to sequential order of events and ***packaging and handling techniques*** and methods of protecting material edge and surface are used.
	6.4. Common faults in product and process problems are identified and appropriate remedial action taken according to workplace operating procedures.
7. Clean up.	7.1. Unused materials are recycled or returned to store.
	7.2. Tools, equipment and plant are cleaned, maintained and stored.
	7.3. Work area is cleaned and waste disposed of safely.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - drawings and specifications
    - MSDS data
    - standards
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply measurements and calculations and to identify data
- planning and organisational skills to identify requirements, apply relevant resources and sequence tasks
- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- AS1473 Guarding and safe use of woodworking machinery
- interpretation of working drawings and specifications
- job safety analysis (JSA) and safe work method statements
- machining processes relevant to joining of joinery components
- materials and their characteristics relevant to joinery unit construction
- materials identification marking systems
- measuring and setting out processes relevant to joinery unit components
- types and characteristics of adhesives relevant to manufacture of joinery units and components
- types and characteristics of fixings and fasteners relevant to joinery unit

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REQUIRED SKILLS AND KNOWLEDGE

construction

- types and uses of static machines
- types of fitments and their construction
- types of framework and their construction
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to manufacture at least two joinery units using the materials listed in the range statement, providing evidence of the ability to:

- identify types of joinery unit products
- identify components of joinery unit products
- identify construction and assembly method and process sequencing
- identify maximum and minimum standards and governing authority
- comply with OHS regulations applicable to workplace operations
- organisational quality procedures and processes applied within context of manufacturing components for joinery units
- identify machining processes required and select appropriate machines
- set up machines for machining applications safely and correctly
- safely and efficiently operate machines to accurately carry out designed processes to set-out material
- select and use appropriate processes, tools and equipment for hand application work
- set up and operate portable power tools safely and correctly
- demonstrate safe and efficient procedures in setting up work and using hand tools
- demonstrate safe and efficient procedures in holding components during manufacturing

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EVIDENCE GUIDE

	processes • identify typical faults and problems that occur and action required to rectify them • communicate with others to ensure safe and effective workshop operations.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • work area and static machines appropriate to task • working drawings and specifications relevant to activity • procedure documents appropriate to manufacturing processes • tools, plant and equipment relevant to manufacture processes • materials and components appropriate to activity. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm a reasonable inference that

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EVIDENCE GUIDE

competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

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RANGE STATEMENT

Information includes:	• diagrams or sketches • instructions issued by authorised organisational or external personnel • manufacturer specifications and instructions, where specified • MSDS • memos • regulatory and legislative requirements pertaining to manufacturing joinery components • relevant Australian standards • safe work procedures relating to manufacturing joinery components • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others

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RANGE STATEMENT

	• use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• angle grinders • bevels • compressors • crimping machines • drop saws • hammers • hand and pneumatic pop-riveters • measuring tapes • overhead/pendant cranes and forklifts • pneumatic screwdrivers • punching and forming press tools • squares.
Plant includes:	• air compressors • portable power tools • power requirements • static machines.
Quality requirements include relevant regulations, including:	• AS1473 Guarding and safe use of woodworking machinery • internal company quality policy and standards • manufacturer specifications where specified • workplace operations and procedures.
Materials include:	• laminated material • metallic and non-metallic materials • timber.
Environmental requirements include:	• clean-up management • dust and noise • stormwater protection • waste management.
Statutory and regulatory authority includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Fasteners include:	• adhesives • crimping • knockdown fittings • nails • nuts and bolts

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RANGE STATEMENT

	• pop rivets • screws.
Preparation techniques include:	• cutting, routing and jointing processes • dressing process • stacking procedures.
Processes for manufacture include:	• glass panels • panelling and laminates • timber framework • timber mouldings.
Fastened joints include:	• bolts and nuts • metal rods and connection plates • nails.
Assembling processes include:	• fitments and units • prefabricated timber framework • shopfronts.
Packaging and handling techniques include using:	• bubble plastic • cardboard • clear plastic sheet • polystyrene • timber.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCJN3005A Cut and install glass

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit specifies the outcomes required to manually cut glass to simple shapes for installation purposes.

Application of the Unit

Application of the unit This unit of competency supports the achievement of skills and knowledge to cut glass for installation in an off-site environment in accordance with AS1288 Glass in building - Selection and installation, and may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied. 1.8. Safe working area around glass installation is maintained in accordance with site requirements and OHS regulations.
2. Cut glass to a straight line.	2.1. Type, size and thickness of glass are selected appropriate for application (thickness less than 6.38mm) and location is determined from job drawings, specifications and glazing schedule. 2.2. Openings to receive glass are inspected for obstructions and clearances in accordance with standard operating procedures. 2.3. Cutting process is identified in accordance with AS1288 Glass in building - Selection and installation, and glass is cut to specification on a line using straight edge and scoring and breaking to run cut to tolerance of ±1mm. 2.4. Glass sheets are used in the most economical layout, with cutting defects recognised and corrective action taken. 2.5. Sharp edges are removed to provide safe edges to glass.

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ELEMENT	PERFORMANCE CRITERIA
3. Circle and hole cutting.	3.1. Type and thickness of glass is selected appropriate for application and centre of hole or circle is set out using edge, rule and permanent marking pen. 3.2. Circles and holes in glass are cut to specification using pyramid method, completing pre-cut checks before positioning circle cutter. 3.3. Cutting defects are recognised and corrective action is taken in line with standard procedures and according to AS1288, with most economical layout used with glass sheets. 3.4. Sharp edges are removed to provide safe edges to glass.
4. Cut glass to simple shapes.	4.1. Glass to be used is selected and template is marked and prepared to designed shape. 4.2. Template is used to mark outline on glass with permanent marking pen. 4.3. Glass is cut to shape and size to specification and glass offcuts are removed safely to AS1288 specification. 4.4. Cutting defects are recognised and corrective action is taken in line with standard procedures and according to AS1288, with most economical layout used with glass sheets. 4.5. Sharp edges are removed to provide safe edges to glass.
5. Clean up.	5.1. Recyclable material is sorted and stored for collection. 5.2. Glass surface and surrounding frame are cleaned and cleared of waste material and assembled according to job specifications, with loose debris and waste material removed and disposed of safely. 5.3. Tools and equipment are cleaned, maintained and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

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REQUIRED SKILLS AND KNOWLEDGE

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - drawings and specifications
    - glazing schedules
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply measurements
- planning and organisational skills to identify requirements, apply relevant resources and sequence tasks
- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- AS1288 Glass in buildings - Selection and installation
- job safety analysis (JSA) and safe work method statements
- material handling processes related to glass
- measuring and setting out processes relevant to glass cutting
- safe procedures for glass cutting
- types of glass and their characteristics
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to set out and cut glass, providing evidence of the ability to: • select and use appropriate processes, tools and equipment to carry out application tasks • comply with OHS regulations applicable to workplace operations • apply organisational quality procedures and processes within the context of glazing • demonstrate sound techniques in selecting, handling and placing glass for cutting • display sound and accurate techniques to set out glass or templates • demonstrate sound and safe techniques to cut regular and irregular shaped glass and cut a hole in a glass panel • communicate with others to ensure safe and effective workshop operations.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • workshop location and appropriate bench or table • tools and equipment appropriate for

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EVIDENCE GUIDE

	application tasks • range of glass suitable for proposed activities • drawings and documentation relevant to tasks. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge • all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

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EVIDENCE GUIDE

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to cutting and installing glass
- relevant Australian standards
- safe work procedures relating to cutting and installing glass
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Planning and preparation include:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- equipment defect identification

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RANGE STATEMENT

	• work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment include:	• dividers and wing compasses • glass cutters • measuring tapes and rules • pincers • squares • straight edges • tee squares.
Quality requirements include relevant regulations, including:	• AS1288 Glass in buildings - Selection and installation • internal company quality policy and standards • manufacturer specifications where specified • workplace operations and procedures.
Materials include:	• aluminium • glass • timber.
Environmental requirements	• clean-up management

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RANGE STATEMENT

include:	• dust and noise • stormwater protection • waste management.
Statutory and regulatory authority includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCJS3002A Manufacture stair components for straight flighted stairs

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit specifies the outcomes required to undertake the manufacturing processes required to prepare and manufacture components for the assembly of straight flighted stairs.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills and knowledge to manufacture stair components for straight flighted stairs, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2. Prepare strings for assembly.	2.1. Strings are set out for treads and risers with nosing marked accurately, housings cut and waste removed accurately to set-out and depth. 2.2. Grooves or mortises to receive balusters are run/carried out to set-out requirements. 2.3. Open strings are cut to set-out shape for treads and risers and ends of strings are cut to set-out requirements for junction with newels/landing or are left long for on-site fitting with string marked for identification where applicable.
3. Prepare post for spiral stair.	3.1. Post is manufactured and/or dressed to designed shape and set-out to designed requirements of ***stair***. 3.2. Housings are cut and made accurately to set-out and required depth.
4. Prepare newels for assembly.	4.1. Housings are cut and made accurately to newel set-out and required depth. 4.2. Mortises are cut and made accurately to set-out and required depth and newels are marked for identification, where applicable.

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ELEMENT	PERFORMANCE CRITERIA
5. Cut treads, risers and wedges to length and shape.	5.1. Treads are cut to designed length and shape. 5.2. Risers are cut to designed length and requirement for junction with strings and wedges marked to design and cut to shape and quantity.
6. Prepare balustrade components.	6.1. Handrail is manufactured to shape with groove run for balusters where applicable, with mortises in handrail for balusters made accurately to set-out. 6.2. Balusters are accurately cut to designed length. 6.3. Handrail is cut to length and sections marked for identification, where applicable.
7. Finish surface and preassemble stair.	7.1. Exposed surfaces of components are sanded to specification for finish and component parts are checked to ensure fit to specification. 7.2. Components are preassembled to ensure stair will assemble appropriately.
8. Clean up.	8.1. Materials are stacked and/or stored for transportation. 8.2. Work area is cleared and waste material disposed of safely. 8.3. Tools and equipment are cleaned, maintained and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret drawings and specifications

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REQUIRED SKILLS AND KNOWLEDGE

- use and interpret non-verbal communication
- use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply measurements and calculations
- planning and organisational skills to identify requirements, apply relevant resources and sequence tasks
- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- basic stair design
- Building Code of Australia (BCA) requirements relevant to stair building and installation
- commonly used stair construction and joining methods
- interpretation of drawings and specifications
- job safety analysis (JSA) and safe work method statements
- materials identification marking systems
- measuring and setting out processes relevant to stair construction
- organisation's quality assurance requirements
- types and characteristics of adhesives, fixings and fasteners related to stair construction
- types and characteristics of stairs
- types and uses of static machines
- types of materials and their characteristics related to stair construction
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to produce components for one cut and one closed string stair, providing evidence of the ability to:

- comply with OHS regulations applicable to workplace operations
- apply organisational quality procedures and processes within context of manufacturing components for stairs
- identify design of stair and details of component composition and design
- identify methods of manufacturing, setting out techniques and material required
- select and use appropriate processes, tools and equipment to construct and manufacture components
- select appropriate material and safe and effective procedures to use machines and prepare material to initial requirements
- adopt appropriate and efficient procedures to construct strings to designed requirements
- use correct procedures in setting out and using machines, power tools and hand tools to mould and manufacture components to designed shape
- safely and efficiently prepare all components for assembly
- appropriately check all component connections to ensure joints will fit in assembly
- adopt safe and effective handling procedures

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EVIDENCE GUIDE

	for movement and placement of material and components • identify typical faults and problems that occur and action required to rectify them • communicate with others to ensure safe and efficient workshop operations.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • workshop location and appropriate workspace • static machines appropriate for activity • set-out material and components prepared for manufacturing processes • tools and equipment appropriate for activity • drawings and documentation relevant to design. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able

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EVIDENCE GUIDE

to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches

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RANGE STATEMENT

	• instructions issued by authorised organisational or external personnel • manufacturer specifications and instructions, where specified • material safety data sheets (MSDS) • memos • regulatory and legislative requirements pertaining to manufacturing stair components • relevant Australian standards • safe work procedures relating to manufacturing stair components • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of static machines

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RANGE STATEMENT

	• use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• chisels • clamps • hammers • hand saws • jig saws • measuring tapes and rules • power drills • power saws • routers • saw stools • spirit levels • squares • work bench.

Quality requirements include:	• attention to machining processes
	• control of handling procedures
	• quality of materials
	• relevant regulations, including:
	  • AS1473 Guarding and safe use of woodworking machinery or equivalent
	  • internal company quality policy and standards
	  • manufacturer specifications where specified
	  • workplace operations and procedures
	• use and maintenance of equipment
	• workplace operations and procedures.

Materials include:	• metal • timber.
Environmental requirements include:	• clean-up management • dust and noise • stormwater protection • waste management.
Statutory and regulatory authority includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Stair types include:	• curved • geometric

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RANGE STATEMENT

- closed string.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCJS3003A Assemble and install stairs

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit specifies the outcomes required to assemble prepared components required for the assembly and installation of a timber stair to location.

Application of the Unit

Application of the unit This unit of competency supports the achievement of skills and knowledge required to assemble stair components and install all types of timber stair construction, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2. Select and prepare materials and components.	2.1. Methods of assembling erected stairs are identified and ***components*** checked for appropriate locations in stair structure. 2.2. Method of assembling and ***fixing*** are determined in accordance with stair design and location.
3. Assemble strings and newels.	3.1. Specific position for stairs is identified, measurements are checked and adjustments made where applicable. 3.2. Strings and newels are assembled to design and fixed to specification. 3.3. Strings to be fixed to walls are temporarily supported or directly fixed in position to specification.
4. Install treads and risers.	4.1. Assembled strings and newels are temporarily braced in vertical position. 4.2. Treads and risers about newels are fitted and fixed to assembly and flight is checked for true and square. 4.3. Intermediate treads and risers are fitted and wedged where applicable to fit tight to housings to specification.

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ELEMENT	PERFORMANCE CRITERIA
5. Assemble and install landings.	5.1. Bearers, where applicable, and joists are fitted and fixed to level according to fixing specification. 5.2. Nosing and flooring are fitted and fixed to form landing to specified finish and fascia is fitted and fixed to landing according to finish specification.
6. Install handrail and balustrade.	6.1. Balusters/intermediate railing and handrails are fitted to form stair balustrade according to specification, with balusters checked to ensure plumb fit. 6.2. Newels are checked prior to final fixing to ensure plumb fit. 6.3. Handrailings are fitted and fixed to wall in accordance with specifications.
7. Install spiral stair and curved strings.	7.1. Location of stair and first step is accurately marked on floor and central post is erected into true position, fixed at floor and temporarily braced at top. 7.2. Initial string section is temporarily supported in place for assembly, and treads and risers are fitted and fixed into position to specification. 7.3. Stair is progressively developed with the extending, supporting and fixing of curved string, and completed with head secured to floor/landing, balustrade ***installed*** and central post fixed to specifications.
8. Secure stair to structure and line spandril area.	8.1. Securing of stair to building is carried out during/on completion of assembly. 8.2. Spandril, where applicable, is framed, lined and fixed out to specified finish.
9. Clean up.	9.1. Stair is checked, with marks removed and surfaces left to specified finish. 9.2. Area is cleared and waste material removed. 9.3. Glue blocks are fitted to treads and risers according to specified locations. 9.4. Tools and equipment are cleaned, maintained and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret drawings and specifications
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply calculations
- planning and organisational skills to identify requirements, apply relevant resources and sequence tasks
- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- adhesives, fixings and fasteners related to stair construction
- assembling procedures for stairs
- interpretation of drawings and specifications
- job safety analysis (JSA) and safe work method statements
- levelling techniques
- materials and their characteristics, relevant to stair construction
- marking of components
- materials identification
- measuring and setting out related to assembling and installing stairs
- organisation's quality assurance requirements
- stair construction and joining methods
- types of stairs
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to assemble and install a complete stair that includes flight and landing balustrades, providing evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational quality procedures and processes within the context of assembling and installing timber stairs • identify correct location, design of stair and method of attaching and securing to structure • identify delivered components, materials and assembly diagram, if applicable • accurately set out stair location and check levels for adjustments on newels • select and use appropriate processes, tools and equipment to assemble stair components • demonstrate safe and effective procedures in assembling strings and newels and installing landing bearers and joists • select and use safe and efficient procedures in installing treads, risers, flooring and nosing • adopt and use appropriate techniques to fit and fix balustrades • complete installation with stair true to plumb and level, and fixed securely to structure with surfaces finished free of marks

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EVIDENCE GUIDE

	• adopt safe and effective handling procedures for movement and placement of material and components • identify typical faults and problems that occur and action required to rectify them • communicate with others to ensure safe and effective stair installation.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • site location for stair installation • stair components, accessory materials and fixings and fasteners • tools and equipment appropriate for activity • drawings, specifications and documentation relevant to the installation. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able

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EVIDENCE GUIDE

to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches

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RANGE STATEMENT

- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to assembling and installing stairs
- relevant Australian standards
- safe work procedures relating to assembling and installing stairs
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Planning and preparation include:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- equipment defect identification
- work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- hazard control
- hazardous materials and substances
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - concealed services (water, power and gas)
  - lighting
  - restricted access barriers
  - traffic control
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
  - working platforms
- use of firefighting equipment
- use of tools and equipment

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RANGE STATEMENT

- workplace environmental requirements and safety.

Tools and equipment include:

- air compressor and hoses
- chisels
- clamps
- hammers
- hand saws
- measuring tapes and rules
- nail guns
- power drills
- power leads
- power planers
- power saws
- saw stools
- screwdrivers
- set spanners
- spirit levels
- squares.

Quality requirements include:

- control of handling procedures
- procedures for installing and finishing
- quality of materials
- relevant regulations, including:
  - Australian standards
  - internal company quality policy and standards
  - manufacturer specifications where specified
  - workplace operations and procedures
- use and maintenance of equipment
- workplace operations and procedures.

Materials include:

- medium density fibreboard (MDF)
- plastics
- plywood
- steel
- timber.

Environmental requirements include:

- clean-up management
- dust and noise
- stormwater protection
- waste management.

Statutory and regulatory authority includes:

- federal, state and local authorities administering applicable Acts, regulations and codes of practice.

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RANGE STATEMENT

Components include:	• balusters • flooring • handrailing • landing bearers • landing joists • newels • nosing • risers • strings • treads.
Fixing includes:	• bolts and nuts • glue and wedging • glue blocks • handrail bolts • nailing • screws, including coach screws.
Installed stairs may involve:	• a piece by piece assembly on location, for example with a stair between two full height walls to allow for flights to be preassembled and lifted and fitted into place as part of a complete stair.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCJS3004A Manufacture and install continuous handrailing and special stair components

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit specifies the outcomes required to prepare, join and install continuous handrailing and special stair components. Special stair components include wreaths, scrolls, bullnosed steps and decorative features.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills and knowledge to manufacture and install continuous handrailing and special stair components, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2. Prepare wreath for continuous handrailing.	2.1. Pitch of stair and change of direction of handrail are identified from stair design. 2.2. Area governing design of wreath is set out or assessed to determined thickness of material to be prepared. 2.3. Material is prepared, cut square to wreath length and set out to shape for dressing. 2.4. Wreath is formed to square section with designated twist and free of bumps.
3. Join and mould wreath to straight sections.	3.1. Straight sections of handrail are measured and cut to length with ends square to join wreath and joined to specifications with joints tight and no movement. 3.2. Wreath is moulded to handrail shape and fine sanded to smooth finish. 3.3. Handrailing is installed in lengths practical to manage and rejoined in location.
4. Manufacture scroll and join to handrail.	4.1. Design of scroll and wreath, where applicable, is identified, set out and prepared to designed shape. 4.2. Materials are prepared to required overall scroll and wreath dimensions, set-out patterns are applied and

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ELEMENT	PERFORMANCE CRITERIA
	scroll and wreath are formed to basic shapes. 4.3. Scroll and wreath are moulded to design and connecting handrail shape and fine sanded to smooth finish. 4.4. Scroll and wreath are joined to handrail to specification with joints tight and no movement.
5. Manufacture and install bullnosed steps.	5.1. Design of bullnosed steps is identified, method of constructing curve is determined, and riser of step is manufactured to design curve with block support ***fixed*** to specification. 5.2. Tread is cut and dressed with nosing to shape according to design specification. 5.3. Bullnosed step is fitted and fixed to stair and secured in location to specified fixing.
6. Manufacture and install brackets and decorative features.	6.1. Brackets and Scotia, where applicable, are fitted and secured into place to cut and mitred string to specified fixing. 6.2. Decorative/ornamental features are fitted and secured to designed position and to specified fixing, and all surfaces are fine sanded to smooth finish.
7. Clean up.	7.1. Area is cleaned and waste material disposed of safely. 7.2. Tools and equipment are cleaned, maintained and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand

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REQUIRED SKILLS AND KNOWLEDGE

- follow instructions
- read and interpret drawings and specifications
- use and interpret non-verbal communication
- use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- interpret drawings and documentation
- numeracy skills to apply measurements and calculations
- planning and organisational skills to identify requirements, apply relevant resources and sequence tasks
- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- commonly used stair construction and joining methods
- identification marking of materials systems
- interpretation of drawings and specifications
- job safety analysis (JSA) and safe work method statements
- measuring and setting out processes relevant to manufacturing and installing stair components
- methods of forming and constructing handrails
- organisation's quality assurance requirements
- special feature components of stair construction
- timber carving and moulding techniques
- types and characteristics of stairs
- types and use of adhesives, fixings and fasteners relevant to stair construction
- types and uses of static machines
- types of materials and their characteristics relevant to stair construction
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to manufacture a scroll, ramp and wreath and join to a handrail where applicable plus manufacture and install bullnose and common stair brackets and decorative features, providing evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational quality procedures and processes within the context of manufacturing and installing special features to stairs • identify details of special features, design of stair and method of attaching to adjoining components • identify method of manufacturing, setting out techniques and materials required • select and use appropriate processes, tools and equipment to manufacture and install feature items • select appropriate materials and use safe and effective procedures to operate machines and prepare material to initial requirements • demonstrate correct procedures in setting out and using machines, power tools and hand tools to mould and manufacture designed shape • adopt safe and effective handling procedures for movement and placement of materials and components • safely and efficiently fit and secure feature item to designed location

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EVIDENCE GUIDE

	• identify typical faults and problems that occur and action required to rectify them • communicate with others to ensure safe and effective workplace operations.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • workshop and site location for manufacturing and installation processes • materials appropriate to application tasks • tools and equipment appropriate to proposed processes • drawings and documentation relevant to activity. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments.

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EVIDENCE GUIDE

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel

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RANGE STATEMENT

	• manufacturer specifications and instructions, where specified • material safety data sheets (MSDS) • memos • regulatory and legislative requirements pertaining to manufacturing and installation of handrailing and stair components • relevant Australian standards • safe work procedures relating to manufacturing and installation of handrailing and stair components • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of static machines

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RANGE STATEMENT

	• use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• chisels, including carving chisels • clamps • hammers • hand saws • measuring tapes and rules • power drills • power routers • power saws • saw stools • screwdrivers • set spanners • spirit levels • squares.

Quality requirements include:	• attention to specifications of work
	• control of handling procedures
	• procedures for installing and finishing
	• quality of materials
	• relevant regulations, including:
	  • AS1473 Guarding and safe use of woodworking machinery
	  • internal company quality policy and standards
	  • manufacturer specifications where specified
	  • workplace operations and procedures
	• use and maintenance of equipment
	• workplace operations and procedures.

Materials include:	• metal • timber.
Environmental requirements include:	• clean-up management • dust and noise • stormwater protection • waste management.
Statutory and regulatory authority include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Fixed includes:	• gluing

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RANGE STATEMENT

- handrail bolts
- nailing
- screws.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCJS3005A Manufacture stair components for curved and geometric stairs

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit specifies the outcomes required to undertake the manufacturing processes required to prepare and manufacture components for the assembly of curved and geometric stairs.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills and knowledge to manufacture stair components for curved and geometric stairs, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2. Manufacture strings for geometric curves.	2.1. Material is prepared to designed structural requirements. 2.2. Curved wall/profile is constructed to curve design of ***stair***. 2.3. Developed pitch is set out to curved wall/profile location. 2.4. String is ***manufactured*** in accordance with curved wall and set out to specifications.
3. Prepare strings for assembly.	3.1. Strings are set out for treads and risers with nosing marked accurately, housings cut and waste removed accurately to set-out and depth. 3.2. Grooves or mortises to receive balusters are run/carried out to set-out requirements. 3.3. Open strings are cut to set-out shape for treads and risers and ends of strings are cut to set-out requirements for junction with newels/landing or left long for on-site fitting with string marked for identification where applicable.
4. Set out and manufacture curved	4.1. Curved and geometric stairs are set out to specifications.

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ELEMENT	PERFORMANCE CRITERIA
and geometric stair post for spiral stairs.	4.2. Post is manufactured and/or dressed to designed shape and set out to designed requirements of stair. 4.3. Housings are cut and made accurately to set-out and required depth.
5. Prepare newels for assembly.	5.1. Housings are cut and made accurately to newel set-out and required depth. 5.2. Mortises are cut and made accurately to set-out and required depth and newels are marked for identification, where applicable.
6. Cut treads, risers and wedges to length and shape.	6.1. Treads are cut to designed length and shape. 6.2. Risers are cut to designed length and requirement for junction with string. 6.3. Wedges are marked to design and cut to shape and quantity.
7. Prepare balustrade components.	7.1. Handrail is manufactured to shape with groove run for balusters, where applicable, and mortises in handrail for balusters are made accurately to set-out. 7.2. Balusters are cut to designed length. 7.3. Handrail is cut to length and sections are marked for identification, where applicable.
8. Finish surface and preassemble stair.	8.1. Exposed surfaces of components are sanded to specification for finish and component parts are checked to ensure they will fit to specification. 8.2. Components are preassembled to ensure stair will assemble appropriately.
9. Clean up.	9.1. Materials are stacked and/or stored for transportation. 9.2. Work area is cleared and waste material disposed of safely. 9.3. Tools and equipment are cleaned, maintained and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

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REQUIRED SKILLS AND KNOWLEDGE

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret drawings and specifications
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply measurements and calculations
- planning and organisational skills to identify requirements, apply relevant resources and sequence tasks
- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- basic curved stair design
- Building Code of Australia (BCA) requirements relevant to stair construction
- commonly used stair construction and joining methods
- interpretation of drawings and specifications
- job safety analysis (JSA) and safe work method statements
- material identification marking systems
- measuring and setting out processes relevant to curved stair construction
- organisation's quality assurance requirements
- types and characteristics of stairs
- types and use of adhesives, fixings and fasteners related to stair construction
- types and use of static machines
- types of materials and their characteristics related to stair construction
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to produce all components for assembly of two stair types, one with a cut and closed string and one an open string, providing evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational quality procedures and processes within context of manufacturing components for curved stairs • identify design of stair and details of component composition and design • identify methods of manufacturing, setting out techniques and materials required • select and use appropriate processes, tools and equipment to construct and manufacture components • select appropriate material and safe and effective procedures to use machines and prepare material to initial requirements • adopt appropriate and efficient procedures to construct curved strings to designed requirements • use correct procedures in setting out and using machines, power tools and hand tools to mould and manufacture components to designed shape • safely and efficiently prepare all components for assembly • check all component connections to ensure joints will fit in assembly

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EVIDENCE GUIDE

- adopt safe and effective handling procedures for movement and placement of materials and components
- identify typical faults and problems that occur and action required to rectify them
- communicate with others to ensure safe and efficient workshop operations.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

1.1. Resource implications for assessment include:

- workshop location and appropriate workspace
- static machines appropriate for activity
- set-out materials and components prepared for manufacturing processes
- tools and equipment appropriate for activity
- drawings and documentation relevant to design.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm a reasonable inference that

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EVIDENCE GUIDE

competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

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RANGE STATEMENT

Information includes:	• diagrams or sketches • instructions issued by authorised organisational or external personnel • manufacturer specifications and instructions, where specified • material safety data sheets (MSDS) • memos • regulatory and legislative requirements pertaining to manufacturing stair components • relevant Australian standards • safe work procedures relating to manufacturing stair components • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment

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RANGE STATEMENT

	• use of static machines • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• chisels • clamps • hammers • hand saws • jig saws • measuring tapes and rules • power drills • power saws • routers • saw stools • spirit levels • squares • work bench.

Quality requirements include:	• attention to machining processes
	• control of handling procedures
	• quality of materials
	• relevant regulations, including:
	  • AS1473 Guarding and safe use of woodworking machinery
	  • internal company quality policy and standards
	  • manufacturer specifications where specified
	  • workplace operations and procedures
	• use and maintenance of equipment
	• workplace operations and procedures.

Materials include:	• metal • timber.
Environmental requirements include:	• clean-up management • dust and noise • stormwater protection • waste management.
Statutory and regulatory authority includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Stair includes:	• curved

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RANGE STATEMENT

Manufactured may include using:	• geometric • open or closed strings • spiral. • band saw • buzzer • docking saw • mortiser • spindle shaper.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCJS3006A Construct fabricated stairs

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit specifies the outcomes required to construct fabricated stairs, which may involve one or more flights in their structure and could incorporate fabricated components that are alternatives to timber components.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills and knowledge to construct fabricated stairs, which may involve one or more flights in its structure and may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2. Set out and prepare material.	2.1. Exit and ground finish levels are determined from job drawings and site location. 2.2. Rise, going and pitch of stair calculations are determined from job drawings and site location, with all measurements and requirements conforming to the Building Code of Australia (BCA). 2.3. Full size set out of stairs is made to determine rise, going and pitch of stairs to actual location of landings, strings, treads and newels. 2.4. Location of stair and newels is determined from job drawings and pitch of stairs or full size is set out. 2.5. Location of footings, where applicable, is marked to layout of designed stairs to meet job drawings and specifications or full size set-out. 2.6. Strings components are selected in accordance with set-out. 2.7. Components for newels are selected and set out to design of stairs, storey rods and job drawings or from full size set-out. 2.8. Newels are assembled and checked to provide tight

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ELEMENT	PERFORMANCE CRITERIA
	fit for strings and bearers, where applicable, to specifications.
	2.9. Material for treads is checked against set-out and square to length according to requirements of stair design and BCA.
3. Assemble and erect stair.	3.1. Footings with post support, where applicable, are prepared to requirements of job drawings and specifications.
	3.2. Angle brackets are attached to strings to set-out locations for tread support according to requirements of detail drawings and specifications.
	3.3. Newels are erected into position and temporarily braced to plumbing position and strings are located and fixed into position according to specifications.
	3.4. Tie bolts, where applicable, are located and secured to specification to maintain stair width, and stair is attached to building using appropriate ***fixings and fasteners*** in accordance with detailed drawings and specifications.
	3.5. Treads and decking are fixed into location to detailed drawings and specifications, and bracing and lateral ties are fixed to newels to specifications, where applicable, to maintain rigidity to stair structure.
4. Fit and fix handrailing and balustrade.	4.1. Material for handrailing and ***balustrade*** is checked to length, and adjustment is made to specification where appropriate.
	4.2. Handrailing is fitted and fixed into place to specifications and measurements above nosing line of a flight and above a landing deck according to BCA.
	4.3. Balustrade is fitted and fixed into place to specifications and requirements of BCA.
5. Finish stairs.	5.1. Arises and sharp edges are removed and finished to specification, where appropriate.
	5.2. Non-slip surface is adhered to treads, where required, in accordance with specifications and BCA.
6. Clean up.	6.1. Area is cleared and waste disposed of safely.
	6.2. Unused materials are stored and/or stacked.
	6.3. Tools and equipment are cleaned, maintained and stored.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret drawings and specifications
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply measurements and calculations
- planning and organisational skills to identify requirements, apply relevant resources and sequence tasks
- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- BCA requirements relevant to stairs
- factors governing design of stairs
- interpretation of drawings and specifications
- job safety analysis (JSA) and safe work method statements
- measurement and calculation processes related to lineal measurements in stair design
- stair construction techniques
- terminology of stair components and dimensional relationships
- types and characteristics of stairs
- types and uses of materials used in stair construction.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to assemble and erect timber and other material component stairs covering one flight to a landing, including handrail or balustrade, providing evidence of the ability to:

- comply with OHS regulations applicable to workplace operations
- comply with organisational quality procedures and processes within the context of constructing and installing fabricated stairs
- identify location and details of fabricated stair components and construction
- carry out accurate calculations to determine actual rise and going for each step and pitch of stairs
- prepare accurate set-out of stair in order to check all stair components
- adopt and use safe and effective procedures to prepare stair components, assemble and fix to position in accordance with BCA, specifications and site conditions
- identify typical faults and problems that occur and action required to rectify them
- identify types of stair construction and common terminology
- convey appropriate analysis and understanding of design concepts in drawings and specifications of nominated project
- communicate with others to ensure safe and effective workplace operations.

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EVIDENCE GUIDE

Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • drawings and information relevant to stair design activities • suitable work location to carry out design work stair construction • BCA documentation • work location ready for stair construction and installation • plant and equipment appropriate to construction process of stairs • construction materials appropriate to proposed construction of stairs • hand and power tools appropriate to construction process of stairs. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able

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EVIDENCE GUIDE

to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches

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RANGE STATEMENT

	• instructions issued by authorised organisational or external personnel • manufacturer specifications and instructions, where specified • material safety data sheets (MSDS) • memos • regulatory and legislative requirements pertaining to constructing stairs • relevant Australian standards • safe work procedures relating to constructing stairs • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment

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RANGE STATEMENT

	• working platforms and scaffolding • workplace environmental requirements and safety.
Tools and equipment include:	• air compressor and hoses • bevels • chisels • fencing bars • hammers • hand saws • measuring tapes and rules • mechanical nailing tools • nail bags • power drills • power leads • power planers • power saws • saw stools • shovels • spanners • spirit levels • squares • steel squares and fences • string lines.

Quality requirements include:	• attention to specification of work
	• control of handling procedures
	• quality of materials
	• relevant regulations, including:
	  • Australian standards
	  • internal company quality policy and standards
	  • manufacturer specifications where specified
	  • workplace operations and procedures
	• use and maintenance of equipment
	• workplace operations and procedures.

Materials include:	• handrails and balustrades made of:
	  • cast acrylic materials
	  • glass
	  • metal
	  • timber

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RANGE STATEMENT

	• fibreglass strings made of:
	  • composite materials
	  • metal
	  • timber
	• treads made of:
	  • metal
	  • timber
	  • cast acrylic materials
	  • concrete
	  • fibreglass
	  • fibre-cement.

Environmental requirements include:	• clean-up management • dust and noise • stormwater protection • waste management.
Statutory and regulatory authority includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.

Fixings and fasteners include:	• for timber construction:
	  • bolts and nuts
	  • coach screws
	  • metal brackets
	  • nails and spikes
	  • steel tie rods
	  • timber joining methods
	• for steel construction:
	  • bolts
	  • patented metal connecting plates
	• for stair members to masonry walls:
	  • metal angle brackets
	  • patented masonry anchors
	  • wall plug and coach screw.

Balustrade construction may be of:	• handrailing and balusters fixed to face of newels • handrailing mortised into newels • parallel railing fixed to face of newels.

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Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCJS3011A Design and set out stairs

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit specifies the outcomes required to design and set out dressed material to prepare for manufacturing processes in preparation for the assembly of components to construct a stair.

Application of the Unit

Application of the unit This unit of competency supports the achievement of skills and knowledge to design and set out stairs, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for work.	1.1. ***Quality assurance requirements*** with company's stair-building operations are recognised and adhered to.
	1.2. ***Safety*** (***OHS***) requirements in accordance with setting out of stairs and workshop operations are recognised and adhered to.
	1.3. ***Design of stair*** is identified from job drawings and specifications for types of stair construction and stair components to be set out.
	1.4. Doorways and head height clearance are measured and dimensions governing stair pitch and ***factors of design*** are obtained directly from constructed building or drawing details.
	1.5. ***Rise and going for steps*** are determined and lengths of strings calculated appropriate for the stair use and structural design, including landings if specified.
	1.6. Use and structural design for ***winders*** are identified and considered for inclusion in stair set-out if required.
	1.7. Methods of joining stair ***components*** and balustrade members are identified for ***manufacturing processes*** and preparation of components for joining.
	1.8. Storey rod and full size set-out are prepared where applicable.
2. Prepare stair material for setting out.	2.1. ***Materials*** are selected and dressed in accordance with stair requirements and specifications.
	2.2. Laminated sections are formed and joined to designed curve and pitch to specifications.
3. Set out strings for a stair.	3.1. ***Tools and equipment*** are selected to carry out processes consistent with job requirements.
	3.2. Steel square or pitch board is prepared to stair pitch set-out.
	3.3. Strings are set out in temporary erected positions to show locations of treads and risers, with allowances for nosing and wedges on closed strings and to show lengths for junctions with newels and landings
4. Set out newels.	4.1. Floor/landing height relationships with allowances for floor discrepancies are accurately marked on newels.
	4.2. Newels are set out to show positions of strings, treads, flooring, joists, bearers and handrails.

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ELEMENT	PERFORMANCE CRITERIA
	4.3. Locations for housings are accurately marked on newels.
5. Set out component parts.	5.1. Lengths and bevels, where applicable, are determined from string and newel set-outs. 5.2. Component parts are set out to respective lengths and bevels where applicable.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret drawings and specifications
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply measurements and calculations
- planning and organisational skills to identify requirements, apply relevant resources and sequence tasks
- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- Building Code of Australia (BCA)

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REQUIRED SKILLS AND KNOWLEDGE

- calculations related to lineal measurements in stair design
- component parts of balustrades, landings and stairs
- drawings and specifications
- handling of materials relevant to stair construction
- job safety analysis (JSA) and safe work method statements
- materials relevant to stair construction
- measuring and setting out related to stair construction
- organisation's quality assurance requirements
- stair construction and joining methods
- terminology of components and dimensional relationships
- tools and equipment related to stair setting out
- types of stairs
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to set out at least two types of stair designs listed in the range statement, providing evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational quality procedures and processes within context of preparation of material and setting out for timber stairs • identify details and specifications of nominated stair to be set out • identify limitations on design in accordance with BCA • demonstrate appropriate calculations to accurately determine number of rises, actual rise, run and going • identify materials required and prepare accurate cutting list • select materials and safely and effectively operate machines to dress material to specified sizes • select and use appropriate processes, tools and equipment for setting out material • display accurate application and clear marking in setting out materials for stair components • demonstrate safe and effective handling procedures for movement and placement of material and components • identify typical faults and problems that occur and action required to rectify them

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EVIDENCE GUIDE

	• communicate with others to ensure safe and effective workplace operations.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • workplace operation, tools and equipment appropriate to activity • static machines appropriate to material preparation for setting out • material relevant to proposed activity • drawings, set-out, specifications and documentation relevant to activities. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that:

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EVIDENCE GUIDE

- competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Quality assurance requirements include:

- control of handling procedures
- procedures for setting out
- quality of materials
- use and maintenance of equipment
- workplace operations and procedures.

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RANGE STATEMENT

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Design of stair includes:	• open or closed string
	• curved flight
	• dog legged
	• geometric stairs
	• quarter spaced landings
	• spiral stairs
	• straight flights
	• ¼ winder stairs that include:
	  • a landing
	  • cut and closed strings.

Factors of design include:	• area available for stair and rise of stair • doorways and head height clearance • structural limitations in accordance with BCA.
Rise and going for steps are determined by:	• going for step design in accordance with minimum going according to classification of building • maximum allowable rise for each step

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RANGE STATEMENT

	• total rise of the stair.
Winders are:	• designed with dimensions for winder treads in accordance with BCA • identified and included for use in lieu of landings.
Components include:	• balusters • handrails • landing bearers • landing joists • multiple railing • newels • risers • strings • treads.
Manufacturing processes include:	• docking to lengths • grooving • housing • mortising • rebating • trenching.
Materials include:	• medium density fibreboard (MDF) • plastics • plywood • steel • timber.
Tools and equipment include:	• bevels • marking gauge • measuring tapes and rules • squares • steel squares.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCLBM3001A Licence to operate a concrete placing boom

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit specifies the outcomes required to operate a concrete placing boom which is a mobile truck mounted plant incorporating a knuckle boom, capable of power operated slewing and luffing to place concrete by way of pumping through a pipeline attached to, or forming part of, the boom of the plant for licensing purposes.

Application of the Unit

Application of the unit

This unit requires the operator to plan the work, conduct routine checks, check controls, set up and prepare for operation, deliver concrete, and shut down and secure concrete placing boom.

This unit is based on the requirements of the National Standard for Licensing Persons Performing High Risk Work.

This unit in its current form meets state and territory licensing requirements. Any alteration will result in a unit which is not acceptable to regulators for the purpose of licensing.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units

Nil

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Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Set up and prepare for operation.	1.1. ***Ground suitability*** is inspected and checked. 1.2. ***Concrete placing boom*** is driven to or located at work area according to procedures. 1.3. Concrete placing boom is positioned for work application and ***stability*** according to procedures. 1.4. Concrete placing boom is started according to procedures and checked for any abnormal noise. 1.5. All ***safety devices*** are tested according to procedures. 1.6. Post start operational checks are carried out according to procedures. 1.7. Delivery system components, including booms, lines and adaptors, are positioned securely and safely according to procedures. 1.8. Appropriate ***hazard prevention/control measures*** are applied to the work area according to procedures. 1.9. Pumping systems are tested and prepared for use according to procedures.
2. Deliver concrete.	2.1. Supply of bulk concrete to the hopper is coordinated safely with the ***supply vehicle*** operator/s. 2.2. Concrete placing boom is operated safely using ***relevant boom movements*** to deliver the concrete as required. 2.3. ***Safe operating techniques*** are applied for all operations. 2.4. ***Communication signals*** are correctly interpreted according to the ***appropriate standard***. 2.5. Monitor boom movement constantly ensuring safety of personnel, delivery hose and stability. 2.6. ***Unplanned and/or unsafe situations*** are responded to in line with procedures. 2.7. Concrete placing boom is safely withdrawn from the work area at the completion of the delivery task.
3. Shut down and secure concrete placing boom.	3.1. Delivery lines and hopper are cleaned out according to procedures. 3.2. Boom is correctly stowed and secured for travel according to procedures. 3.3. Outriggers/stabilisers are stowed and secured according to procedures. 3.4. Plates or packing are stowed and secured for travel. 3.5. Concrete placing boom is ***shut down*** according to

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ELEMENT	PERFORMANCE CRITERIA
	procedures. 3.6. Routine post-operational equipment checks are carried out according to procedures. 3.7. All defects and damage are reported and recorded according to procedures and appropriate action is taken.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- accurately record and maintain information relating to concrete placing boom operations
- communication techniques in the workplace including hand signals and use of fixed channel two-way radios
- complete the positioning, stabilising, set up and pack up of concrete placing booms, including the use of outriggers/stabilisers and packing
- communication skills at a level sufficient to communicate with other site personnel
- operation and control of a concrete placing boom including all functions to within their maximum capability
- risk assessment and hazard prevention strategies, including hierarchy of control as applied to the positioning and safe operation of the concrete placing boom (particular awareness of the risks associated with overhead powerlines/electrical cables, ground conditions, wind, pedestrians and tipping)
- verify problems and equipment faults and demonstrate appropriate response procedures.

Required knowledge

Required knowledge for this unit is:

- assessment of ground conditions to confirm that the site is suitable (eg. firm, level and safe) to set up the concrete placing boom
- Commonwealth, state or territory OHS legislation, standards and codes of practice relevant to the full range of processes for conducting concrete placing boom operations
- level of literacy to be able to read and comprehend manufacturer's instructions, procedures and safety signs

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REQUIRED SKILLS AND KNOWLEDGE

- concrete placing boom delivery operations and operating techniques
- organisational and site standards, requirements, policies and procedures for conducting concrete placing boom operations
- procedures for the recording, reporting and maintenance of workplace records and information, including the use of the service logbook.
- understanding of the hierarchy of hazard identification and control
- read and interpret the data plate for the concrete placing boom.
- typical routine problems encountered in the process and with equipment and adjustments required for correction.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Successful assessment of this unit meets the competency requirement of the National Standard for licensing Persons Performing High Risk Work.

State/Territory OHS regulators have mandated the use of Assessment Instruments and Instructions for Assessment for this unit which have been endorsed by the national body responsible for OHS matters.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- comply with OHS licensing legislation
- assess ground conditions to confirm that the site is suitable (e.g. firm, level and safe) to erect the concrete placing boom.
- assess risk and hazard control strategies, including hierarchy of control as applied to the positioning and safe operation of the concrete placing boom (particular awareness of the risks associated with overhead powerlines/electrical cables, ground conditions, wind, pedestrians and tipping)
- complete the pre operational check, positioning, stabilising, set up, operation, post operational checks of a concrete placing boom including all functions to their maximum extension in the moving of the boom and placement of concrete to the safe working rated capacity of the concrete placing boom
- operate the concrete placing boom in conjunction with other appropriate personnel (where applicable).

Context of and specific resources for assessment

- Assessment of the safe and effective application of knowledge and skill to workplace tasks (performance) must be undertaken using the endorsed Assessment Instrument
- Assessment of performance must be undertaken either in the workplace or in a

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EVIDENCE GUIDE

	realistically simulated workplace setting
	• Assessors must ensure that the assessment in the workplace is organised to ensure that all the required equipment and materials and a suitable working area is made available to suit the assessment and the workplace
	• Assessment must occur under standard and authorised work practices, safety requirements and environmental constraints
	• Assessment is to comply with relevant appropriate standard requirements
	• Applicants must have access to:
	  • personal protective equipment (PPE) for the purpose of the Performance Assessment
	  • appropriate concrete placing boom and associated equipment in safe condition
	  • communication equipment (e.g. two way radios, etc) where appropriate
	  • other appropriate personnel to direct the placement of concrete (where applicable).

Method of assessment	Assessment must be conducted using the endorsed Assessment Instruments. These Instruments provide advice on their application. The use of **'simulators'** in the assessment of this unit of competency is **not acceptable**. Assessment may be in conjunction with the assessment of other units of competency. Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge. Assessment must confirm a reasonable inference that competency is not only able to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
Guidance information for assessment	Further information about endorsed Assessment Instruments may be obtained from state/territory OHS regulators.

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Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Hazards may include but not limited to:

- ground stability (eg. ground condition, recently filled trenches, slopes)
- overhead hazards (eg. power lines, service pipes)
- insufficient lighting
- traffic (eg. pedestrians, vehicles, other plant)
- environmental conditions (eg. wind, lightning, storms)
- other specific hazards (eg. dangerous materials).

Hazard control measures:

Refers to the systematic process of eliminating or reducing the risk to personnel and property through the application of controls.

It includes the application of the hierarchy of control, the six-step preference of control measures to manage and control risk:

- elimination
- substitution
- isolation
- engineering control measures
- using safe work practices
- personal protective equipment.

Appropriate standards may include:

- codes of practice
- legislation
- Australian Standards,
- manufacturer's specifications
- industry standards (where applicable).

Concrete placing boom may include:

- a mobile truck mounted plant incorporating a knuckle boom, capable of power operated slewing and luffing to place concrete by way of pumping through a pipeline attached to, or forming part of, the boom of the plant.

Communication methods may

- verbal and non-verbal language

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RANGE STATEMENT

include but not limited to:	• written instructions • signage • hand signals • listening • questioning to confirm understanding • appropriate worksite protocol.
Appropriate personnel may include but are not limited to:	• those associated with the operations of the concrete placing boom • supervisors • suppliers • clients • colleagues • managers.
Procedures may include but are not limited to:	• manufacturer's guidelines (range chart, instructions, specifications or checklists) • industry operating procedures • workplace procedures (work instructions, operating procedures, checklists).
Service logbook may include but is not limited to:	• any logbook • service book • history record system where the service and maintenance history is kept.
Hoppers may include but not limited to:	• large receptacles mounted on the concrete placing boom which receive the concrete from supply vehicles and dispense the concrete to the pumping system.
Communication equipment may include but not limited to:	• fixed channel two way radios • mobile phones. **NB**: where radio communication equipment is used the transmitting frequencies of the equipment must be selected to prevent interference to or from other radio equipment being used in the vicinity of the crane.
Ground suitability may include but not limited to:	• rough uneven ground • backfilled ground • soft soils • hard compacted soil • rock • bitumen • concrete.

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RANGE STATEMENT

Stability may include but not limited to:	• deploying outriggers • establish correct size plates or packing • correctly position plates or packing.
Safety devices may include but not limited to:	• horns/sirens • audible and visual reversing devices • operator restraint devices (where applicable) • lights • safety interlocks.
Hazard prevention/control measures may include but not limited to:	• safety tags on electrical switches/isolators • powerlines are insulated • safety observer used inside exclusion zone • power disconnected • traffic barricades and control • pedestrian barricades • trench covers • movement of obstructions • personal protective equipment • adequate lighting • earth chain.
Supply vehicle may include but not limited to:	• cement mixer trucks • agitator trucks • other concrete transport vehicles.
Relevant boom movements may include but not limited to:	• raising boom • lowering boom • slewing • knuckling.
Safe operating techniques may include but not limited to:	• achieving a safe optimum output from the concrete delivery system within the manufacturers design specifications • ensuring hopper levels are maintained at safe and recommended levels • safe operation of the boom to ensure safety of operator and other personnel • managing engine power to ensure efficiency of concrete pump truck platform movements and to minimise damage to the engine and gears • coordinating engine power with gear selection ensuring smooth transition and operation within torque range.

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RANGE STATEMENT

Communication signals may include but not limited to:	• boom up - hand • boom down - hand • boom left - hand • boom right - hand • open or extend boom -hand • close or retract boom - hand • stop boom - hand • start pump speed up - hand • slow pump down - hand • little bit - hand • add water - hand • all done clean-up - hand.
Unplanned and/or unsafe situations may include but not limited to:	• failure/lose of control e.g. blown hose or concrete line • failure of equipment e.g. hydraulic system • environmental conditions (e.g. wind, lightning, storms, etc).
Shut down may include but is not limited to:	• retracting boom • positioning/securing boom • retracting outriggers/stabilisers • idle engine to stabilise temperature • disengage PTO (where applicable) • turning off engine (where applicable) • remove key from ignition (where applicable) • lock and secure cabin (where applicable).

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Co-requisite units Nil

Functional area

Functional area

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CPCCLDG3001A Licence to perform dogging

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit specifies the outcomes required to perform slinging techniques, including the selection and inspection of lifting gear and/or the directing of the crane operator in the movement of the load when the load is out of view of the crane/ operator for licensing purposes.

Application of the Unit

Application of the unit

This unit covers the scope of work to demonstrate competency in the application of slinging techniques, selection and inspection of lifting gear and/or the directing of the crane/ operator in the movement of the load.

This unit is based upon the National Standard for Licensing Persons Performing High Risk Work.

This unit in its current form meets state and territory licensing requirements. Any alteration will result in a unit which is not acceptable to regulators for the purpose of licensing.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units

Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan job.	1.1. ***Site information*** is obtained and related to the task. 1.2. ***Hazard*** s and potential hazards associated with the slinging and directing of loads are identified. 1.3. ***Hazard control measures*** consistent with ***appropriate standards*** are identified to ensure the safety of personnel and equipment. 1.4. The weight, dimensions and centre of gravity of the load are identified and assessed. 1.5. Suitable lifting/slinging points on the load are identified. 1.6. Appropriate ***lifting equipment*** needs are assessed. 1.7. Appropriate ***communication methods*** are assessed with ***crane***/ operators and other ***appropriate personnel***. 1.8. Manufacturer's specifications/information is obtained for special loads where necessary.
2. Select and inspect equipment.	2.1. Lifting equipment appropriate to the task is selected. 2.2. Lifting equipment is inspected for serviceability. 2.3. Damaged or excessively worn lifting equipment is identified, labelled and rejected. 2.4. Appropriate communication methods for the crane/operator and appropriate personnel are selected. 2.5. Appropriate ***communication equipment*** is selected and its serviceability is checked. 2.6. Appropriate ***personal protective equipment*** (PPE) is selected and checked.
3. Prepare site and equipment.	3.1. Hazard prevention/control measures are applied consistent with appropriate standards to ensure the safety of personnel and equipment. 3.2. Appropriate slinging method is selected. 3.3. Lifting equipment is prepared and assembled where appropriate. 3.4. Load destination is prepared.
4. Perform task.	4.1. Lifting equipment is attached and secured to the lifting hook using appropriate techniques. 4.2. Lifting hook is positioned over the load centre of gravity. 4.3. Lifting equipment is attached and secured to the load

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ELEMENT	PERFORMANCE CRITERIA
	in an appropriate manner. 4.4. Tag line is attached and secured where appropriate. 4.5. Test lift is conducted to ensure security of load. 4.6. Load is moved maintaining stability and control at all times. 4.7. Appropriate communication methods and ***communication signals*** are applied to safely coordinate the load movement both within sight and out-of-sight of crane operator. 4.8. The load is landed to ensure that it is stable and secure from movement. 4.9. Lifting equipment is removed or disconnected from load and prepared for next task or storage.
5. Shut down job and clean up.	5.1. Unserviceable lifting equipment inspected and rejected. 5.2. ***Defective equipment*** is isolated and tagged. 5.3. Lifting equipment is stored in accordance with procedures and appropriate standards. 5.4. Hazard prevention/control measures are removed where appropriate. 5.5. Excess materials from the work area are removed (where applicable). 5.6. Defects are reported and recorded according to procedures and appropriate action is taken.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication techniques in the workplace including whistles, hand signals and use of fixed channel two-way radios
- communication skills at a level sufficient to communicate with other site personnel
- calculate rated capacity of lifting equipment
- apply different methods for making temporary connections to loads using fibre and synthetic ropes

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REQUIRED SKILLS AND KNOWLEDGE

- ability to interpret rated capacity and working load limit tags
- hazard identification and control
- slinging techniques
- selection and inspection of lifting equipment
- directing crane operators in the moving of loads in a safe manner, using a slewing crane
- inspection and care of a wide range of lifting equipment to appropriate Australian Standards and/or manufacturer's specifications.

Required knowledge

Required knowledge for this unit is:

- appropriate mathematical procedures for estimation and measurement of loads
- basic knowledge of types of cranes and their functions
- Commonwealth, state or territory OHS legislation, standards and codes of practice relevant to the full range of techniques for undertaking dogging activities
- load stability and safety factors in line with manufacturer's specifications
- types of lifting equipment and slinging techniques for use, and their limitations and performance in a wide range of conditions (including but not limited to slings, beams, accessories, clamps, work-boxes, bins and pallets)
- understanding of the hierarchy of control.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Successful assessment of this unit meets the competency requirement of the National Standard for licensing Persons Performing High Risk Work.

State/Territory OHS regulators have mandated the use of Assessment Instruments and Instructions for Assessment of this unit which have been endorsed by the national body responsible for OHS matters.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- comply with Commonwealth, state or territory OHS legislation, standards relevant to safe dogging and crane operations.
- communicate and work safely with others in the work area.
- apply Hazard prevention and control measures consistent with appropriate standards.
- apply to move loads in conjunction with cranes including, the reading of tags, slinging, loading, directing and landing loads with a slewing mobile crane with a telescopic boom and a winch, in and out of sight of the crane/ operator, moving four loads of varying shapes, sizes and weights.
- use fibre and/or synthetic rope as tag lines, and connecting to loads using clove hitch, rolling hitch, bowline and single sheetbend.
- conduct pre and post operational checks of the lifting equipment.

Context of and specific resources for assessment

- Assessment of the safe and effective application of knowledge and skill to workplace tasks (performance) must be undertaken using the national OHS endorsed Assessment Instrument
- Assessment of performance must be undertaken either in the workplace or in a realistically simulated workplace setting

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EVIDENCE GUIDE

	• Assessors must ensure that the assessment in the workplace is organised through a workplace supervisor to ensure that all the required equipment and materials and a suitable working area is made available to suit the assessment and the workplace
	• Assessment must occur under standard and authorised work practices, safety requirements and environmental constraints
	• Assessment is to comply with the requirements of any relevant Standards or operating procedures for dogging activities
	• Applicants must have access to:
	  • personal protective equipment (PPE) for the purpose of the performance assessment.
	  • four different loads as prescribed in the endorsed assessment instrument
	  • lifting and associated equipment
	  • suitable slewing crane
	  • communication equipment (eg. fixed channel, two-way radios) as applicable.

Method of assessment	Assessment must be conducted using the national OHS endorsed Assessment Instrument. This Instrument provides instruction on the application of the assessment. Assessment may be in conjunction with the assessment of other units of competency. The use of **'simulators'** in the assessment of this unit of competency is **not acceptable**. Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge. Assessment must confirm a reasonable inference that competency is not only able to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
Guidance information for assessment	Further information about endorsed Assessment Instruments may be obtained from state/territory OHS regulators.

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Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Site informationmay include but not be limited to	• local conditions such as access and egress • work method statements.
Hazards may include but not limited to:	• ground stability (eg. ground condition, recently filled trenches, slopes) • overhead hazards (e.g. power lines, service pipes, trees, buildings, etc) • insufficient lighting • traffic (e.g. pedestrians, vehicles, plant) • weather (e.g. wind, lightning, storms) • other specific hazards (e.g. trip hazards, heights, radio interference, etc).
Hazard prevention/control measures	The systematic process of eliminating or reducing the risk to personnel and property through the application of controls. It includes the application of the hierarchy of controls, including: 1. elimination. 2. substitution. 3. isolation. 4. engineered control measures. 5. safe work practices. 6. personal protective equipment.
Appropriate standard s may include:	• codes of practice • legislation • Australian Standards • manufacturer's specifications • industry standards.
Lifting Equipment may include but not limited to:	• fibre ropes • wire ropes • chain

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RANGE STATEMENT

	• wire and synthetic slings • shackles • eyebolts • beam clamps • plate clamps • spreader beams • lifting beams • pallet forks and cages • concrete kibbles • personnel boxes.
Communication Methods may include but are not limited to:	• written instructions • signage, • hand signals • listening • questioning to confirm understanding • appropriate worksite protocol.
Cranes may include but not limited to:	• tower cranes (including self erecting) • portal boom cranes • vehicle loading cranes • slewing mobile cranes • non-slewing cranes • derrick cranes.
Appropriate personnel may include but are not limited to:	• supervisors • colleagues • managers who are authorised to take responsibility for the workplace or operations.
Communication Equipment may include but not limited to:	• fixed channel two-way radios • whistles • bells.
Personal protective equipment (PPE) may include but not limited to:	• hard hat • safety boots • gloves • high visibility clothing • reflective vest • relevant breathing, hearing, sight, skin and sun protection.
Load destination may include but not limited to:	• ground • loading platforms • suspended floors • vehicles.

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RANGE STATEMENT

Communication signals may include but not limited to:	• stop - hand • stop - whistle • hoist up - hand • hoist up - whistle • hoist down - hand • hoist down - whistle • luff boom down - hand • luff boom down - whistle • luff boom up - hand • luff boom up - whistle • telescope out - hand • telescope out - whistle • telescope in - hand • telescope in - whistle • slew left - hand • slew left - whistle • slew right - hand • slew right - whistle.
Defective Equipment may include but not limited to:	• excessive wear • damage • stretched • broken wires • cut/damaged fibres.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCLHS3001A Licence to operate a personnel and materials hoist

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit specifies the outcomes required to operate a builder's hoist in which personnel, goods and/or materials may be hoisted, and which comprises a car, structure, machinery or other equipment associated with the hoist, and which may be a cantilever hoist, a tower hoist or a multiple winch operation. Included in this definition are situations where winches may be configured to operate as hoists for the transportation of personnel for licensing purposes.

Application of the Unit

Application of the unit

This unit requires the operator to plan work, conduct routine checks, conduct hoist operations and shut down and secure a hoist.

This unit is based on the requirements of the National Standard for Licensing Persons Performing High Risk Work.

This unit in its current form meets state and territory licensing requirements. Any alteration will result in a unit, which is not acceptable to regulators for the purpose of licensing.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan work.	1.1. Potential workplace ***hazards*** are identified. 1.2. ***Hazard prevention/control measures*** are identified consistent with ***appropriate standards*** to ensure the safety of personnel and equipment. 1.3. The ***hoist*** is appropriate to the load/s and workplace conditions. 1.4. The weight of the load is determined according to ***procedures***. 1.5. Appropriate communication methods are identified with appropriate personnel.
2. Conduct routine checks.	2.1. Hoist is visually checked for any damage or detects. 2.2. Appropriate hazard prevention/control measures are applied to the work area according to procedures and potential hazards. 2.3. ***Service logbook*** for the hoist is checked for compliance. 2.4. ***Routine pre-start operational checks*** are carried out according to procedures. 2.5. Main power supply is switched on. 2.6. Hoist is started according to procedures and checks made for any abnormal noises. 2.7. All controls located and checked for serviceability. 2.8. Post start operational checks are carried out according to procedures. 2.9. All ***communication equipment***, lighting and alarm systems are checked for serviceability. 2.10. All hoist ***safety devices*** are tested to their maximum according to procedures. 2.11. All damage and defects are reported and recorded according to procedures and appropriate action taken.
3. Conduct hoist operations.	3.1. Hoist is operated according to procedures. 3.2. Communication methods associated with hoist movements are conducted according to procedures and the appropriate standards. 3.3. Loads and load distribution are continually monitored to ensure that the hoist is operated within its capacity according to procedures. 3.4. Hoist movement is monitored constantly ensuring safety to appropriate personnel and hoist stability.

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ELEMENT	PERFORMANCE CRITERIA
	3.5. ***Unplanned and/or unsafe situations*** are responded to in line with procedures.
4. Shut down and secure hoist.	4.1. Hoist is ***shut down*** according to procedures. 4.2. All fences and gates are secured according to procedures. 4.3. Routine post-operational checks are carried out according to procedures. 4.4. Power is isolated and secured against unauthorised access. 4.5. All damage and defects are reported and recorded according to procedures and appropriate action taken.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- accurately record and maintain information relating to personnel and materials hoist operations
- communication techniques in the workplace including bells, lights, intercom and use of two-way radios
- conduct personnel and materials hoist operations
- operate emergency brake and decent system
- hazards associated with the operation of the personnel and materials hoist are identified, risks are assessed and effective hazard prevention/control measures for those hazards identified and put into place
- inspect personnel and materials hoist equipment, safety equipment and installation for safe operation including general maintenance
- communication skills at a level sufficient to communicate with other site personnel (e.g. receive and interpret work instructions, safety information, emergency procedures)
- verify problems and equipment faults and demonstrate appropriate response.

Required knowledge

Required knowledge for this unit is:

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REQUIRED SKILLS AND KNOWLEDGE

- weight of the load is determined from labels, markings or load paperwork
- level of literacy to be able to read and comprehend manufacturer's instructions, procedures and safety signs
- Commonwealth, state or territory OHS legislation, standards and codes of practice relevant to the full range of processes for the hoist class
- hoist operations and operating techniques
- understanding of the hierarchy of hazard identification and control
- materials safety data sheets and requirements for safe movement of materials
- organisational and workplace standards, requirements, policies and procedures for conducting operations for the hoist class
- procedures for the recording, reporting and maintenance of workplace records and information
- rated capacity and working load limits
- typical routine problems encountered in the operation of a personnel and materials hoist, inspection techniques and adjustments required for correction.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	Successful assessment of this unit meets the competency requirement of the National Standard for licensing Persons Performing High Risk Work. State/territory OHS regulators have mandated the use of Assessment Instruments and Instructions for Assessment for this unit which have been endorsed by the national body responsible for OHS matters.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with OHS licensing legislation • effectively communicate and work safely with others in the work area • identify hazards associated with the operation of the hoist and put in place effective hazard controls for those hazards identified • determine load weights • effectively conduct personnel and materials hoist operations to include the tasks of raising and lowering loads with hoist; in conjunction with awareness of the limitations of the hoist according to manufacturer's specifications • ensure hoist controls are attended throughout operation. • effectively conduct emergency lowering of the hoist according to the emergency lowering procedure • effectively conduct pre operational and shut down checks of the personnel and materials hoist (particular awareness of controls, alarms and lockout devices).
Context of and specific resources for assessment	• Assessment of the safe and effective application of knowledge and skill to workplace tasks (performance) must be undertaken using the endorsed Assessment Instrument • Assessment of performance must be

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EVIDENCE GUIDE

	undertaken either in the workplace or in a realistically simulated workplace
	• Assessors must ensure that the assessment in the workplace is organised to ensure that all the required equipment and materials and a suitable working area is made available to suit the assessment and the workplace
	• Assessment must occur under standard and authorised work practices, safety requirements and environmental constraints
	• Assessment is to comply with relevant appropriate standard requirements
	• Applicants must have access to:
	  • personal protective equipment (PPE) for the purpose of the Performance Assessment.
	  • appropriate personnel and material hoist and associated equipment in safe condition
	  • suitable loads as specified by the endorsed assessment instrument
	  • communication equipment (e.g. two-way radios, intercoms, light systems, buzzers, bells etc)

Method of assessment	Assessment must be conducted using the endorsed Assessment Instruments. These Instruments provide advice on their application. The use of **'simulators'** in the assessment of this unit of competency is **not acceptable**. Assessment may be in conjunction with the assessment of other units of competency. Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge. Assessment must confirm a reasonable inference that competency is not only able to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
Guidance information for assessment	Further information about endorsed Assessment Instruments may be obtained from state/territory OHS regulators.

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Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Hazards may include but are not limited to:

- ground conditions (e.g. condition of pavement, slopes)
- overhead hazards (e.g. power lines, service pipes)
- traffic (e.g. pedestrians, vehicles, other plant)
- environmental conditions (e.g. wind, lightning, rain)
- hoist overload
- other specific hazards (e.g. dangerous materials).

Hazard prevention/control measures may include:

Refers to the systematic process of eliminating or reducing the risk to personnel and property through the application of controls. It includes application of the hierarchy of control, the six step preference of control measures to manage and control risk:

- elimination
- substitution
- isolation
- engineering control measures
- using safe work practices
- personal protective equipment

Appropriate standards may include:

- codes of practice
- legislation
- Australian standards
- manufacturer specifications.

Hoist includes:

- the operation of a builder's hoist in which personnel, goods and/or materials may be hoisted, and which comprises a car, structure, machinery or other equipment associated with the hoist, and which may be a cantilever hoist, a tower hoist or a multiple winch operation. Included in this definition are situations where winches may be configured to operate as

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RANGE STATEMENT

	hoists for the transportation of personnel.
Procedures may include but not limited to:	• manufacturer's guidelines (instructions, specifications or checklists) • industry operating procedures • workplace procedures (work instructions, operating procedures, checklists).
Communication methods may include but not limited to:	• verbal and non-verbal language • written instructions • signage • hand signals • listening • questioning to confirm understanding • appropriate worksite protocol • interfloor/level communications
Appropriate personnel may include but not limited to:	• those associated with the operations of the personnel and materials hoist • supervisors • colleagues • managers who are authorised to take responsibility for the workplace or operations.
Service logbook may include but is not limited to:	• any logbook • service book • history record system where the service and maintenance history is kept.
Routine pre start operational checks may include but not limited to:	• ground stability • tower ties/guys are secure • power supply is covered by earth leakage protection • power leads secured above ground level and not attached to scaffolds or building structure • tower guides are clean and free of rust and damage • signs are clearly displayed and legible • brakes and drive mechanism • overhead protection • intercom and signalling systems • barriers, fencing and gates • fuels, oil and water • lubrication (grease) • hoist rope • sheaves and anchorage points.

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RANGE STATEMENT

Communication equipment may include but not limited to:	• fix frequency two-way radios • bells • buzzers • lights. **NB**: where radio communication equipment is used the transmitting frequencies of the equipment must be selected to prevent interference to or from other radio equipment being used in the vicinity of the hoist.
Safety devices may include but not limited to:	• emergency braking system • overrun limits • gate interlocks • personnel access interlock on hoist roof.
Appropriate standards may include but are not limited to:	• codes of practice • legislation • Australian Standards • manufacturer's specifications • industry standards (where applicable).
Unplanned and/or unsafe situations may include but not limited to:	• failure/loss of control e.g. power supply, braking system • failure of equipment e.g. hydraulic system, broken hoist cable, damaged gear drive • environmental conditions e.g. wind, lightning, storms.
Shut down may include but not limited to:	• platform positioned at base of tower • lock on manual safety brake • landing gates secured to prevent unauthorised access • power isolated from control panel • mains power supply isolated and secured • internal combustion engine idled to stabilise temperature • engine turned off • fencing/barriers around base secured to prevent unauthorised access • key removed (where applicable).

Unit Sector(s)

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Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCLHS3002A Licence to operate a materials hoist

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit specifies the outcomes required to operate a materials hoist being a builder's hoist by which only goods or materials and not personnel may be hoisted and where the car, bucket or platform is cantilevered from, and travels up and down externally to, a face of the support structure for licensing purposes.

Application of the Unit

Application of the unit

This unit requires the operator to plan work, conduct routine checks, check controls and operation, conduct hoist operation and shut down and secure hoist.

This unit is based on the requirements of the National Standard for Licensing Persons Performing High Risk Work.

This unit in its current form meets state and territory licensing requirements. Any alteration will result in a unit which is not acceptable to regulators for the purpose of licensing.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units

Nil

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Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan work.	1.1. Potential workplace ***hazards*** are identified. 1.2. ***Hazard control measures*** are identified consistent with ***appropriate standards*** to ensure the safety of personnel and equipment. 1.3. The ***hoist*** is appropriate to the load/s and workplace conditions. 1.4. The weight of the load is determined according to ***procedures***. 1.5. Appropriate communication methods are identified with appropriate personnel.
2. Conduct routine checks.	2.1. Hoist is visually checked for any damage or detects 2.2. Appropriate ***hazard prevention/control measures*** are applied to the work area according to ***procedures***. 2.3. ***Service logbook*** for the hoist is checked for compliance 2.4. ***Routine pre-start operational checks*** are carried out according to procedures. 2.5. Main power supply is switched on. 2.6. Hoist is started according to procedures and checked for any abnormal noises. 2.7. All controls located and checked for serviceability. 2.8. Post start operational checks are carried out according to procedures. 2.9. All ***communication equipment***, lighting and alarm systems are checked for serviceability. 2.10. All hoist ***safety devices*** and functions are tested to their maximum according to procedures. 2.11. All damage and defects are reported and recorded according to procedures and appropriate action taken.
3. Conduct hoist operations.	3.1. Hoist is operated according to procedures. 3.2. Communication methods associated with hoist movement are conducted according to procedures and the appropriate standard. 3.3. Loads and Load distribution are continually monitored to ensure that the hoist is operated within its capacity and according to procedures. 3.4. Hoist movement is monitored constantly ensuring safety to personnel and stability. 3.5. ***Unplanned and/or unsafe*** situations are responded

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ELEMENT	PERFORMANCE CRITERIA
	to in line with procedures.
4. Shut down and secure hoist.	4.1. Hoist is ***shut down***, according to procedures. 4.2. All fences and gates are secured according to procedures. 4.3. Routine post-operational checks are carried out according to procedures. 4.4. Power is isolated and secured against unauthorised access. 4.5. All damage and defects are reported and recorded. according to procedures and appropriate action taken.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- accurately record and maintain information relating to materials hoist operations
- communication techniques in the workplace including bells, lights, hand signals intercom and use of two-way radios
- conduct materials hoist operations
- hazards associated with the operation of the materials hoist are identified, risks are assessed and effective hazard prevention/control measures for those hazards identified and put into place
- inspect materials hoist equipment, safety equipment and installation for safe operation
- interpersonal communication skills at a level sufficient to communicate with other site personnel (e.g. receive and interpret work instructions, safety information, emergency procedures)
- verify problems and equipment faults and demonstrate appropriate response procedures.

Required knowledge

Required knowledge for this unit is:

- weight of the load is determined from labels, markings or load paperwork
- level of literacy to be able to read and comprehend manufacturer's instructions,

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REQUIRED SKILLS AND KNOWLEDGE

procedures and safety signs

- Commonwealth, state or territory OHS legislation, standards and codes of practice relevant to the full range of processes for the hoist class
- hoist operations and operating techniques
- understanding of the hierarchy of hazard identification and control
- materials safety data sheets and requirements for safe movement of materials
- organisational and workplace standards, requirements, policies and procedures for conducting operations for the hoist class
- procedures for the recording, reporting and maintenance of workplace records and information
- rated capacity and working load limits
- typical routine problems encountered in the operation of a materials hoist, inspection techniques and adjustments required for correction.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	Successful assessment of this unit meets the competency requirement of the National Standard for licensing Persons Performing High Risk Work. State/Territory OHS regulators have mandated the use of Assessment Instruments and Instructions for Assessment for this unit which have been endorsed by the national body responsible for OHS matters.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with OHS licensing legislation. • effectively communicate and work safely with others in the work area. • identify hazards associated with the operation of the hoist and put in place effective hazard prevention/controls • determine load weights. • effectively conduct materials hoist operations to include the tasks of raising and lowering loads with equipment and materials for cantilevered cars, buckets or platforms. • ensure the hoist is attended at all times. • effectively conduct pre operational and shut down checks of the materials hoist (particular awareness of controls, alarms and lockout devices).
Context of and specific resources for assessment	• Assessment of the safe and effective application of knowledge and skill to workplace tasks (performance) must be undertaken using the endorsed Assessment Instrument • Assessment of performance must be undertaken either in the workplace or in a realistically simulated workplace setting • Assessors must ensure that the assessment in the workplace is organised to ensure that all the required equipment and materials and a

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EVIDENCE GUIDE

	suitable working area is made available to suit the assessment and the workplace
	• Assessment must occur under standard and authorised work practices, safety requirements and environmental constraints
	• Assessment is to comply with relevant appropriate standard requirements
	• Applicants must have access to:
	  • personal protective equipment (PPE) for the purpose of the Performance Assessment.
	  • appropriate material hoist and equipment in safe condition
	  • suitable loads as specified by the endorsed assessment instrument
	  • communication equipment (e.g. two-way radios, intercoms, light systems buzzers or bells etc)

Method of assessment	Assessment must be conducted using the endorsed Assessment Instruments. These Instruments provide advice on their application. The use of **'simulators'** in the assessment of this unit of competency is **not acceptable**. Assessment may be in conjunction with the assessment of other units of competency. Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge. Assessment must confirm a reasonable inference that competency is not only able to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
Guidance information for assessment	Further information about endorsed Assessment Instruments may be obtained from state/territory OHS regulators.

Range Statement

RANGE STATEMENT

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RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Hazards may include but not limited to:

- ground conditions (e.g. condition of pavement, slopes)
- overhead hazards (e.g. power lines, service pipes)
- Insufficient lighting
- traffic (e.g. pedestrians, vehicles, other plant)
- environmental conditions (e.g. wind, lightning, rain)
- hoist overload
- other specific hazards (e.g. dangerous materials).

Hazard control measures:

Refers to the systematic process of eliminating or reducing the risk to personnel and property through the application of controls.

It includes the application of the hierarchy of control, the six-step preference of control measures to manage and control risk:

- elimination
- substitution
- isolation
- engineering control measures
- using safe work practices
- personal protective equipment.

Appropriate standards may include but not limited to:

- codes of practice
- legislation
- Australian Standards
- manufacturer's specifications
- industry standard (where applicable).

Hoist may include:

the operation of builder's hoist by which only goods or materials and not personnel may be hoisted and where the car, bucket or platform is cantilevered from, and travels up and down externally to, a face of the support structure.

Procedures may include but are

- manufacturer's guidelines (instructions,

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RANGE STATEMENT

not limited to:	specifications or checklists) • industry operating procedures • workplace procedures (work instructions, operating procedures, checklists).
Communication methods may include but are not limited to:	• verbal and non-verbal language • written instructions • signage • hand signals • listening • questioning to confirm understanding • appropriate worksite protocol • interfloor/ level communications.
Appropriate personnel may include but are not limited to:	• those associated with the operations of the hoist • supervisors • colleagues • managers who are authorised to take responsibility for the workplace or operations.
Hazard prevention/control measures may include but not limited to:	• safety tags on electrical switches/isolators • traffic barricades and control • pedestrian barricades • movement of obstructions • personal protective equipment • hoist safety gates and guards • hoist safety interlocks • adequate illumination.
Service logbook may include but is not limited to:	• any logbook • service book • history record system where the service and maintenance history is kept.
Routine pre start operational checks may include but are not limited to:	• check ground stability • tower ties/guys are secure • power supply is covered by earth leakage protection • power leads are secured above ground level and not attached to scaffolds or building structure • tower guides are clean and free of rust and damage • signage is clearly displayed and legible • brakes and drive mechanism

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RANGE STATEMENT

	• overhead protection • intercom and signalling systems • barriers, fencing and gates • fuels, oil and water (where applicable) • lubrication (grease) • hoist rope • sheaves and anchorage points.
Communication equipment may include but is not limited to:	• fixed channel two-way radios • intercoms • bells • lights • buzzers. **NB**: where radio communication equipment is used the transmitting frequencies of the equipment must be selected to prevent interference to or from other radio equipment being used in the vicinity of the hoist.
Safety devices may include but not limited to:	• emergency braking system • overrun limits • gate interlocks.
Unplanned and/or unsafe situations may include but are not limited to:	• failure/lose of control e.g. power supply, braking system • failure of equipment e.g. hydraulic system, broken hoist cable, damaged drive gear • environmental conditions (e.g. wind, lightning, storms, etc).
Shut Down may include but not limited to:	• position platform at base of tower • power isolated from control panel • mains power supply isolated and secured • fencing/barriers around base secured to prevent unauthorised access • landing gates secured to prevent unauthorised access • key removed from control panel (where applicable).

Unit Sector(s)

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Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCLRG3001A Licence to perform rigging basic level

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit specifies the outcomes required to perform basic rigging work associated with movement of plant and equipment, steel erections, hoists (including mast climbing hoists), placement of pre-cast concrete, safety nets and static lines, perimeter safety screens and shutters; and cantilever crane loading platforms for licensing purposes.

Application of the Unit

Application of the unit

This unit requires the applicant to be able plan the work, select and inspect equipment, set up task, erect structures and plant and dismantle structures and plant.

This unit is based upon the National Standard for Licensing Persons Performing High Risk Work.

This unit in its current form meets state and territory licensing requirements. Any alteration will result in a unit which is not acceptable to regulators for the purpose of licensing.

This unit has a pre-requisite requirement. This requirement may be met by either the successful completion of the unit *CPCCLDG3001A Licence to perform dogging* or holding a valid licence for dogging.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units

CPCCLDG3001A	Licence to perform dogging

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan job.	1.1. Task to be undertaken is assessed. 1.2. Potential workplace ***hazards*** are identified. 1.3. ***Hazard control measures*** are identified consistent with ***appropriate standards*** to ensure the safety of personnel and equipment. 1.4. Site information is obtained. 1.5. All ***forces and loads*** associated with erecting and dismantling ***structures*** and ***associated plant*** are considered in consultation with ***appropriate personnel***. 1.6. ***Rigging equipment*** and ***associated equipment*** are identified in consultation with appropriate personnel according to ***procedures*** and site information. 1.7. *Safety equipment* is identified. 1.8. Appropriate ***communication methods*** are identified with appropriate personnel.
2. Select and inspect equipment.	2.1. Rigging equipment and associated equipment are selected and inspected according to procedures and the appropriate standard. 2.2. Safety equipment is selected and inspected according to procedures. 2.3. All defective rigging equipment, associated equipment and safety equipment is isolated, reported and recorded according to procedures. 2.4. ***Communication equipment*** is selected and inspected for serviceability (where applicable.
3. Set up task.	3.1. Appropriate ***hazard prevention/control measures*** are applied to the work area according to procedures. 3.2. ***Ground suitability*** is inspected and checked (where appropriate). 3.3. Site information is reviewed, interpreted and communicated to appropriate personnel and ***appropriate personnel***. 3.4. All forces and loads associated with erecting and dismantling structures and associated plant are determined in consultation with appropriate personnel. 3.5. Safety equipment is fitted and worn correctly (where appropriate). 3.6. Rigging equipment and associated plant are

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ELEMENT	PERFORMANCE CRITERIA
	positioned for work application and stability according to procedures.
	3.7. Methods of applying ***temporary connections*** using fibre rope are applied according to procedures and the appropriate standard.
4. Erect structures and plant.	4.1. Structures and associated plant are erected according to procedures and site information.
	4.2. Stability of structures and associated plant is maintained during erection according to procedures.
	4.3. Work is conducted safely at heights including safe and effective use of safety equipment.
	4.4. Appropriate communication methods and communication equipment, are used to co-ordinate the tasks.
	4.5. Associated plant and rigging equipment is used according to procedures and the appropriate standard.
	4.6. Temporary guys, ties, propping and shoring, including ***flexible steel wire rope***, and tubing, are connected where required.
	4.7. Associated equipment is used in a safe and appropriate manner.
	4.8. The completed task is inspected according to the appropriate standard.
	4.9. Excess materials are removed from the work area (where applicable).
5. Dismantle structures and plant.	5.1. Structures and associated plant are dismantled according to procedures and the appropriate standard.
	5.2. Work is conducted safely at heights including safe and effective use of safety equipment.
	5.3. Stability of structures and associated plant is maintained during dismantling according to procedures.
	5.4. Rigging equipment, associated equipment, safety equipment and associated plant are inspected for damage and defects.
	5.5. All defective rigging equipment, associated equipment, associated plant and safety equipment are isolated reported and recorded according to procedures.
	5.6. Rigging equipment and associated equipment are

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ELEMENT	PERFORMANCE CRITERIA
	stored. according to procedures and the appropriate standard. 5.7. Hazard prevention/control measures are removed (where appropriate).

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to calculate Safe Working Load (SWL) and Working Load Limit (WLL)
- ability to erect and dismantle, level, plumb and stabilise associated plant and structures
- ability to work safely at heights including the correct application of safety equipment.
- accurate interpretation of basic structural charts and structural plans (site information)
- applying methods for making temporary connections of ropes using fibre and synthetic types
- apply methods of splicing and whipping fibre and synthetic ropes
- correct application and use of all rigging and associated equipment
- risk assessment and hazard control strategies
- interpersonal and communication skills at a level sufficient to site/workplace requirements. This includes the relevant communication methods and equipment.
- verify problems and equipment faults and demonstrate appropriate response.

Required knowledge

Required knowledge for this unit is:

- appropriate mathematical procedures for estimation and measurement of loads
- ability to interpret manufacturer's specifications for all plant and equipment use in rigging operations
- knowledge of principles relating to all plant, equipment and structural stability
- knowledge of the types and functions of rigging, safety and associated equipment including an understanding of their limitations.
- organisational and workplace standards, requirements, policies and procedures for rigging

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REQUIRED SKILLS AND KNOWLEDGE

- understanding of the hierarchy of hazard identification and control
- relevant Commonwealth, state or territory and local government OHS legislation, standards and codes of practice for undertaking rigging activities
- understanding of inspection and maintenance requirements of a wide range of appropriate plant and equipment in line with Australian Standards or manufacturer's specifications
- estimation of ground bearing pressures of the full range of soil types and associated ground conditions for setting up plant and equipment.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Successful assessment of this unit meets the competency requirement of the National Standard for licensing Persons Performing High Risk Work.

State/Territory OHS regulators have mandated the use of Assessment Instruments and Instructions for Assessment endorsed by the national body responsible for OHS matters for the assessment of this unit.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- comply with OHS licensing legislation.
- effectively communicate and work safely with others in the work area.
- effectively conduct risk assessment and management procedures.
- effectively complete the following tasks:-
  - inspection of all plant and equipment, and
  - installation of a fall arrest system (Static line), and
  - use of a safety harness / fall arrest system, and
  - installation of crane loading platforms and
  - installation of a safety net, and
  - installation of a shutter and safety screen, and
  - demonstrated ability to work safely at heights, and
  - erection of structural steel, and
  - erection of precast panel, and
  - set up and operation of a winch for load movement, and
  - installation of a materials hoist, or
  - installation of a mast climber.
- effectively demonstrate the following knots,

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EVIDENCE GUIDE

bends and hitches:-

- Sheet bend,
- Becket hitch,
- Running bowline,
- Double bowline.

- effectively demonstrate the following splices and whippings:-
  - Eye splice,
  - Back splice,
  - Short splice,
  - Sail makers whipping,
  - Common whipping,
  - West countryman's

Context of and specific resources for assessment

Assessment of the safe and effective application of knowledge and skill to workplace tasks (performance) must be undertaken using the National OHS endorsed Assessment Instrument.

Assessment of performance must be undertaken either in the workplace or in a realistically simulated workplace setting.

Assessors must ensure that the assessment in the workplace is organised to ensure that all the required equipment and materials and a suitable working area is made available to suit the assessment and the workplace.

Assessment must occur under standard and authorised work practices, safety requirements and environmental constraints.

Assessment is to comply with the requirements of any relevant Standards or operating procedures for basic rigging.

Applicants must have access to:

- personal protective equipment (PPE) for the purpose of the Performance Assessment.
- appropriate safety equipment in safe condition
- appropriate rigging equipment, associated equipment associated plant in safe condition as described in the endorsed assessment instrument
- communication equipment (e.g. two-way

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EVIDENCE GUIDE

	radios) where applicable • appropriate materials as required for safe erection of structures • appropriate materials for conducting fibre rope slicing, whipping, knots, bends and hitches.
Method of assessment	Assessment must be conducted using the national OHS endorsed Assessment Instruments. These Instruments provide advice on their application. The use of **'simulators'** in the assessment of this unit of competency is **not acceptable**. Assessment may be in conjunction with the assessment of other units of competency. Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge. Assessment must confirm a reasonable inference that competency is not only able to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
Guidance information for assessment	Further information about endorsed Assessment Instruments may be obtained from state/territory OHS regulators.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Hazards may include but are not limited to:	• ground stability (e.g. ground condition, recently filled trenches, slopes) • overhead hazards (e.g. power lines, service pipes) (**NB**: minimum clearance distance from powerlines or electrical equipment as determined by relevant state authority or

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RANGE STATEMENT

	electrical supply authority.) • traffic (e.g. pedestrians, vehicles, other plant) • insufficient lighting • environmental conditions (e.g. wind, lightning, storms) • other specific hazards (e.g. dangerous materials).
Hazard control measures:	Refers to the systematic process of eliminating or reducing the risk to personnel and property through the application of controls. It includes the application of the hierarchy of control, the six-step preference of control measures to manage and control risk: • elimination • substitution • isolation • engineering control measures • using safe work practices • personal protective equipment.
Appropriate standards may include:	• codes of practice • legislation • Australian Standards • manufacturer's specifications • industry standards (where applicable).
Site Information may include, but not limited to:	• local conditions such as access and egress, • work method statements, • site specific job safety analyses and other site specific documentation as required. • task plans / Schedules and structural plans.
Forces and Loads may include, but not limited to:	• dead loads • live loads • static load • dynamic loads • wind loads.
Structures may include but are not limited to:	• structural steel • precast panels.
Associated plant may include but not limited to:	• static lines • safety nets • hoists

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RANGE STATEMENT

	• mast climbers • loading platforms.
Appropriate personnel may include:	• engineers • supervisors • colleagues • managers who are authorised to take responsibility for the workplace or operations.

Rigging Equipment may include but is not limited to:	• scaffolds
	• elevated work platforms
	• personnel box
	• cantilevered crane loading platforms
	• mast climbers.
	• safety screens and shutters
	• cranes including but not limited to:
	  • non-slewing cranes
	  • mobile slewing cranes
	  • vehicle loading cranes
	  • tower cranes
	  • self-erecting tower cranes
	  • portal boom cranes
	  • derrick cranes
	  • bridge and gantry cranes.

Associated equipment may include but is not limited to:	• all types of power and manually operated lifting gear • fibre ropes • flexible steel wire rope (FSWR) • chains • wire and synthetic slings • shackles • terminations • wedge sockets • eye bolts • beam clamps • plate clamps • rope grips • turnbuckles • rigging screws • chain blocks • lever blocks • lever-action winches

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RANGE STATEMENT

	• sheaves • spreader bars • lifting beams • jacks • levers • skates • wedges • rollers • girder trolley
Procedures may include but is not limited to:	• manufacturer's guidelines (instructions, specifications or checklists) • industry operating procedures, relevant codes of practice • workplace procedures (work instructions, operating procedures, checklists).
Safety Equipment may include but not limited to:	• safety harness • energy absorber • lanyard • inertia reel • static safety lines • safety nets.
Communication Methods may include but is not limited to:	• verbal and non-verbal language • written instructions • signage • hand signals • listening, • questioning to confirm understanding, and appropriate worksite protocol. **NB**: Mobile phones are not to be used for signalling purposes during the rigging process.
Communication equipment may include but is not limited to:	• fixed channel two-way radios
Hazard prevention/control measures may include but is not limited to:	• safety tags on electrical switches/isolators • powerlines are insulated • safety observer used inside exclusion zone • power disconnected • traffic barricades and control • pedestrian barricades • trench covers

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RANGE STATEMENT

	• movement of obstructions • personal protective equipment • adequate illumination • safety shutters and screens.
Ground suitability may include but is not limited to:	• rough uneven ground • backfilled ground • soft soils • hard compacted soil • rock • bitumen • concrete • suspended concrete floors • building roofs • landings • ground bearing pressure.
Appropriate personnel may include but not limited to	• other riggers • doggers • crane operators.
Temporary connections may include but not limited to:	• knots • bends • hitches • spicing • whipping.
Flexible Steel Wire Rope (***FSWR***) includes:	• identification, uses and connections. May include termination for: • static lines, • guys, • purchase systems, • lashing, • cranes, • hoist and winch ropes.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCLRG3002A Licence to perform rigging intermediate level

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit specifies the outcomes required to perform rigging work at the intermediate level, which includes all the outcomes for rigging work at the basic level, and also includes rigging of cranes, rigging of conveyors, rigging of dredges and excavators, rigging associated with tilt slabs, rigging associated with demolition work, and dual lifts for licensing purposes.

Application of the Unit

Application of the unit

This unit requires the applicant to be able plan the work, select and inspect equipment, set up task, erect structures and plant and dismantle structures and plant.

This unit is based upon the National Standard for Licensing Persons Performing High Risk Work.

This unit in its current form meets state and territory licensing requirements. Any alteration will result in a unit which is not acceptable to regulators for the purpose of licensing.

This unit has a pre-requisite requirement. This requirement may be met by either the successful completion of the unit *CPCCLRG3001A Licence to perform rigging basic level* or holding a valid licence for basic rigging.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units

CPCCLRG3001A	Licence to perform rigging basic level

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan job.	1.1. Task to be undertaken is assessed 1.2. Potential workplace ***hazards*** are identified 1.3. ***Hazard control measures*** are identified consistent with ***appropriate standards*** to ensure the safety of personnel and equipment 1.4. Site information is obtained 1.5. All ***forces and loads*** associated with erecting and dismantling ***structures*** and ***associated plant*** are considered in consultation with ***appropriate personnel***. 1.6. ***Rigging equipment*** and ***associated equipment*** are identified in consultation with appropriate personnel according to ***procedures*** and site information. 1.7. *Safety equipment* is identified. 1.8. Appropriate ***communication methods*** are identified with appropriate personnel.
2. Select and inspect equipment.	2.1. Rigging equipment and associated equipment are selected and inspected according to procedures and the appropriate standard. 2.2. Safety equipment is selected and inspected according to procedures. 2.3. All defective rigging equipment, associated equipment and safety equipment is isolated, reported and recorded according to procedures. 2.4. ***Communication equipment*** is selected and inspected for serviceability (where applicable)
3. Set up tasks.	3.1. Appropriate ***hazard prevention/control measures*** are applied to the work area according to procedures. 3.2. ***Ground suitability*** is inspected and checked (where appropriate). 3.3. Site information is reviewed, interpreted and communicated to appropriate personnel and ***appropriate personnel***. 3.4. All forces and loads associated with erecting and dismantling structures and associated plant are determined in consultation with appropriate personnel. 3.5. Safety equipment is fitted and worn correctly (where appropriate). 3.6. Rigging equipment and associated plant are

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ELEMENT	PERFORMANCE CRITERIA
	positioned for work application and stability according to procedures.
4. Erect structures and plant.	4.1. Structures and associated plant is erected according to procedures and site information. 4.2. Stability of structures and associated plant is maintained during erection according to procedures. 4.3. Work is conducted safely at heights including safe and effective use of safety equipment. 4.4. Appropriate communication methods and communication equipment, are used to co-ordinate the tasks. 4.5. Temporary guys, ties, propping and shoring, including ***flexible steel wire rope***, and tubing, are connected where required. 4.6. Associated plant and rigging equipment is used according to procedures and the appropriate standard. 4.7. Associated equipment is used in a safe and appropriate manner. 4.8. The completed task is inspected according to the appropriate standard. 4.9. Excess materials are removed from the work area (where applicable)
5. Dismantle structures and plant.	5.1. Structures and associated plant are dismantled according to procedures and the appropriate standard. 5.2. Work is conducted safely at heights including safe and effective use of safety equipment. 5.3. Stability of structures and associated plant is maintained during dismantling according to procedures. 5.4. Rigging equipment, associated equipment, safety equipment and associated plant are inspected for damage and defects 5.5. All defective rigging equipment, associated equipment, associated plant and safety equipment are isolated reported and recorded according to procedures. 5.6. Rigging equipment and associated equipment are stored according to procedures and the appropriate standard. 5.7. Hazard prevention/control measures are removed

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ELEMENT	PERFORMANCE CRITERIA (where appropriate)

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to calculate Safe Working Load (SWL) and Working Load Limit (WLL)
- ability to erect and dismantle, level, plumb and stabilise associated plant and structures
- ability to work safely at heights including the correct application of safety equipment.
- accurate interpretation of structural charts and structural plans (site information)
- correct application and use of all rigging and associated equipment
- risk assessment and hazard control strategies
- interpersonal and communication skills at a level sufficient to site/workplace requirements. This includes the relevant communication methods and equipment.
- verify problems and equipment faults and demonstrate appropriate response.

Required knowledge

Required knowledge for this unit is:

- appropriate mathematical procedures for estimation and measurement of loads
- ability to interpret manufacturer's specifications for all plant and equipment use in rigging operations
- knowledge of principles relating to all plant, equipment and structural stability
- knowledge of the types and functions of rigging, safety and associated equipment including an understanding of their limitations
- organisational and workplace standards, requirements, policies and procedures for rigging
- understanding of the hierarchy of hazard identification and control
- relevant Commonwealth, state or territory and local government OHS legislation, standards and codes of practice for undertaking rigging activities
- understanding of inspection and maintenance requirements of a wide range of appropriate plant and equipment in line with Australian Standards or manufacturer's specifications
- estimation of ground bearing pressures of the full range of soil types and associated

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REQUIRED SKILLS AND KNOWLEDGE

ground conditions for setting up plant and equipment.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Successful assessment of this unit meets the competency requirement of the National Standard for licensing Persons Performing High Risk Work.

State/Territory OHS regulators have mandated the use of Assessment Instruments and Instructions for Assessment for this unit which have been endorsed by the national body responsible for OHS matters.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- comply with OHS licensing legislation.
- effectively communicate and work safely with others in the work area.
- effectively conduct risk assessment and management procedures.
- effectively complete the following tasks:
  - adding and removing a tower crane section, or
  - adding and removing a crane lattice boom section, or
  - erecting a non guyed tower (e.g. light tower, and
  - perform a multiple crane lift, or
  - a multiple winch lift, or
  - a combination of a crane and winch lift, and
  - lifting and installing a series of tilt-up panels, or
  - lifting and installing a series of scenery panels (i.e. entertainment industry), and
  - demolish/remove a series of tilt-up panel structures, or
  - demolish/remove a series of scenery panel structures, and
  - demolishing a concrete encased structural steel column and beam.
- **NB**: All specifications for these performance

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EVIDENCE GUIDE

	tasks are detailed in the endorsed assessment instrument. • effectively conduct pre and post operational checks of intermediate rigging equipment.
Context of and specific resources for assessment	Assessment of the safe and effective application of knowledge and skill to workplace tasks (performance) must be undertaken using the endorsed Assessment Instrument. Assessment of performance must be undertaken either in the workplace or in a realistically simulated workplace setting. Assessors must ensure that the assessment in the workplace is organised to ensure that all the required equipment and materials and a suitable working area is made available to suit the assessment and the workplace. Assessment must occur under standard and authorised work practices, safety requirements and environmental constraints. Assessment is to comply with relevant appropriate standard requirements. Applicants must have access to: • personal protective equipment (PPE) for the purpose of the Performance Assessment • appropriate safety equipment is safe condition • appropriate rigging equipment, associated equipment associated plant in safe condition as described in the endorsed assessment instrument • communication equipment (e.g. radios) where applicable • appropriate materials as required for safe erection of structures.
Method of assessment	Assessment must be conducted using the endorsed Assessment Instruments. These Instruments provide advice on their application. The use of **'simulators'** in the assessment of this unit of competency is **not acceptable**. Assessment may be in conjunction with the assessment of other units of competency.

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EVIDENCE GUIDE

	Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge. Assessment must confirm a reasonable inference that competency is not only able to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
Guidance information for assessment	Further information about endorsed Assessment Instruments may be obtained from state/territory OHS regulators.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Hazards may include but not limited to:	• ground stability (e.g. ground condition, recently filled trenches, slopes) • overhead hazards (e.g. power lines, service pipes) (**NB**: Minimum clearance distance from powerlines or electrical equipment as determined by relevant state authority or electrical supply authority) • traffic (e.g. pedestrians, vehicles, other plant) • insufficient lighting • environmental conditions (e.g. wind, lightning, storms) • other specific hazards (e.g. dangerous materials).
Hazard control measures:	Refers to the systematic process of eliminating or reducing the risk to personnel and property through the application of controls. It includes the application of the hierarchy of control, the six-step preference of control

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RANGE STATEMENT

	measures to manage and control risk: • elimination • substitution • isolation • engineering control measures • using safe work practices • personal protective equipment.
Appropriate standards may include but are not limited to:	• codes of practice • legislation • Australian Standards • manufacturer's specifications • industry standards (where applicable).
Site Information may include but is not limited to:	• local conditions such as access and egress • work method statements • site-specific job safety analyses and other site specific documentation as required • task plans /schedules and structural plans.
Forces and Loads may include but are not limited to:	• dead loads • live loads • static load • dynamic loads • wind loads.
Structures may include but not limited to:	• concrete tilt-up panels • scenery panels (used in entertainment) • non guyed light towers.
Associated plant may include but is not limited to:	• all types of cranes • conveyors • dredges • excavators.
Appropriate personnel may include but not limited to:	• supervisors • engineers • colleagues • managers who are authorised to take responsibility for the workplace or operations.
Rigging Equipment may include but is not limited to:	• scaffolds • elevated work platforms • stages • personnel box • cantilevered crane loading platforms,

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RANGE STATEMENT

	• mast climbers
	• safety screens and shutters
	• cranes including but not limited to:
	  • non-slewing cranes
	  • mobile slewing cranes
	  • vehicle loading cranes
	  • tower cranes
	  • self-erecting tower cranes
	  • portal boom cranes
	  • derrick cranes
	  • bridge and gantry cranes.

Associated equipment may include but is not limited to:	• all associated equipment at the basic rigging level, and • lifting clutches (swift lifts) • chain motors.
Procedures may include but are not limited to:	• manufacturer's guidelines (instructions, specifications or checklists) • industry operating procedures, relevant codes of practice • workplace procedures (work instructions, operating procedures, checklists).
Safety Equipment may include but not limited to:	• safety harness • energy absorber • lanyard • inertia reel • safety nets • static lines.
Communication Methods may include but not limited to:	• verbal and non-verbal language • written instructions • signage • hand signals • listening, • questioning to confirm understanding, and appropriate worksite protocol. **NB**: Mobile phones are not to be used for signalling purposes during the rigging process.
Communication equipment may include but is not limited to:	• fixed channel two-way radios
Hazard prevention/control	• safety tags on electrical switches/isolators

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RANGE STATEMENT

measures may include but is not limited to:	• powerlines are insulated • safety observer used inside exclusion zone • power disconnected • traffic barricades and control • pedestrian barricades • trench covers • movement of obstructions • personal protective equipment • adequate illumination.
Ground suitability may include but is not limited to:	• rough uneven ground • backfilled ground • soft soils • hard compacted soil • rock • bitumen • concrete • suspended concrete floors • building roofs • landings • ground bearing pressure.
Appropriate personnel may include but not limited to:	• other riggers • doggers • crane operators.
Flexible Steel Wire Rope (***FSWR***) includes:	• identification, uses and connections. May include termination for: • static lines • guys • purchase systems • lashing • cranes • hoist and winch ropes.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCLRG4001A Licence to perform rigging advanced level

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit specifies the outcomes required to perform rigging work at the advanced level, which includes all the outcomes for rigging work at the basic and intermediate levels, and also includes rigging of gin poles and shear legs, flying foxes and cable ways, guyed derricks and structures, and suspended scaffolds and fabricated hung scaffolds for licensing purposes.

Application of the Unit

Application of the unit

This unit requires the applicant to be able plan the work, select and inspect equipment, set up task, erect structures and plant and dismantle structures and plant.

This unit is based upon the National Standard for Licensing Persons Performing High Risk Work.

This unit in its current form meets state and territory licensing requirements. Any alteration will result in a unit which is not acceptable to regulators for the purpose of licensing.

This unit has a pre-requisite requirement. This requirement may be met by either the successful completion of the unit *CPCCLRG3002A Licence to perform rigging intermediate level* or holding a valid licence for intermediate rigging.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units

CPCCLRG3002A	Licence to perform rigging intermediate level

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan job.	1.1. Task to be undertaken is assessed. 1.2. Potential workplace ***hazards*** are identified. 1.3. ***Hazard control measures*** are identified consistent with ***appropriate standards*** to ensure the safety of personnel and equipment. 1.4. Site information is obtained. 1.5. All ***forces and loads*** associated with erecting and dismantling ***associated plant*** are considered in consultation with ***appropriate personnel***. 1.6. ***Rigging equipment*** and ***associated equipment*** are identified in consultation with appropriate personnel according to ***procedures*** and site information. 1.7. ***Safety equipment*** is identified. 1.8. Appropriate communication methods are identified with appropriate personnel.
2. Select and inspect equipment.	2.1. Rigging equipment and associated equipment are selected and inspected according to procedures and the appropriate standard. 2.2. Safety equipment is selected and inspected according to procedures. 2.3. All defective rigging equipment, associated equipment and safety equipment is isolated, reported and recorded according to procedures. 2.4. ***Communication equipment*** is selected and inspected for serviceability (where applicable)
3. Prepare site and equipment.	3.1. Appropriate ***hazard prevention/control measures*** are applied to the work area according to procedures. 3.2. ***Ground suitability*** is inspected and checked (where appropriate). 3.3. Site information is reviewed interpreted and communicated to appropriate personnel and appropriate personnel. 3.4. All forces and loads associated with erecting and dismantling associated plant are determined in consultation with appropriate personnel. 3.5. Safety equipment is fitted and worn correctly (where appropriate). 3.6. Rigging equipment and associated plant are positioned for work application and stability according to procedures.

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ELEMENT	PERFORMANCE CRITERIA
	3.7. Methods of applying ***temporary connections*** using fibre rope are applied according to procedures and the appropriate standard.
4. Erect structures and plant.	4.1. Associated plant is erected according to procedures and site information.
	4.2. Stability of associated plant is maintained during erection according to procedures.
	4.3. Work is conducted safely at heights including safe and effective use of safety equipment.
	4.4. Appropriate communication methods and communication equipment, are used to co-ordinate the tasks.
	4.5. Temporary guys, ties, propping and shoring, including ***flexible steel wire rope***, and tubing, are connected where required.
	4.6. Associated plant and rigging equipment is used according to procedures and the appropriate standard.
	4.7. Associated equipment is used in a safe and appropriate manner.
	4.8. The completed task is inspected according to the appropriate standard.
	4.9. Excess materials are removed from the work area (where applicable)
5. Dismantle structures and plant.	5.1. Associated plant is dismantled according to procedures and the appropriate standard.
	5.2. Work is conducted safely at heights including safe and effective use of safety equipment.
	5.3. Stability of associated plant is maintained during dismantling according to procedures.
	5.4. Rigging equipment, associated equipment, safety equipment and associated plant are inspected for damage and defects
	5.5. All defective rigging equipment, associated equipment, associated plant and safety equipment are isolated reported and recorded according to procedures.
	5.6. Rigging equipment and associated equipment are stored according to procedures and the appropriate standard.
	5.7. Hazard prevention/control measures are removed (where appropriate)

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to calculate Safe Working Load (SWL) and Working Load Limit (WLL)
- ability to erect and dismantle, level, plumb and stabilise associated plant
- ability to work safely at heights including the correct application of safety equipment.
- accurate interpretation of structural charts and structural plans (Site information)
- applying methods for making temporary connections of ropes using fibre and synthetic types
- correct application and use of all rigging and associated equipment
- risk assessment and hazard control strategies
- interpersonal and communication skills at a level sufficient to site/workplace requirements. This includes the relevant communication methods and equipment.
- verify problems and equipment faults and demonstrate appropriate response.

Required knowledge

Required knowledge for this unit is:

- appropriate mathematical procedures for estimation and measurement of loads
- ability to interpret manufacturer's specifications for all plant and equipment use in rigging operations
- knowledge of principles relating to all plant, equipment and structural stability
- knowledge of the types and functions of rigging, safety and associated equipment including an understanding of their limitations
- organisational and workplace standards, requirements, policies and procedures for rigging
- understanding of the hierarchy of hazard identification and control
- relevant Commonwealth, state or territory and local government OHS legislation, standards and codes of practice for undertaking rigging activities
- understanding of inspection and maintenance requirements of a wide range of appropriate plant and equipment in line with Australian Standards or manufacturer's specifications
- estimation of ground bearing pressures of the full range of soil types and associated ground conditions for setting up plant and equipment.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Successful assessment of this unit meets the competency requirement of the National Standard for licensing Persons Performing High Risk Work.

State/Territory OHS regulators have mandated the use of Assessment Instruments and Instructions for Assessment for this unit which have been endorsed by the national body responsible for OHS matters

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- comply with OHS licensing legislation.
- effectively communicate and work safely with others in the work area.
- effectively conduct risk assessment and management procedures.
- effectively complete the following tasks:
  - rig a span rope, or
  - rig a flying fox, and
  - install a swinging stage, or
  - install a bosuns chair, and
  - set up a gin pole and conduct a lift with a powered winch, and
  - erect and dismantle a hung or suspended scaffold

NB: All specifications for these performance tasks are detailed in the endorsed assessment instrument.

- effectively demonstrate the following knots, bends and hitches:
  - Alpine hitch
  - Bosun chair hitch
  - Prusik hitch
  - Figure eight
- effectively conduct pre and post operational

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EVIDENCE GUIDE

	checks of advanced rigging equipment.
Context of and specific resources for assessment	Assessment of the safe and effective application of knowledge and skill to workplace tasks (performance) must be undertaken using the endorsed Assessment Instrument. Assessment of performance must be undertaken either in the workplace or in a realistically simulated workplace setting. Assessors must ensure that the assessment in the workplace is organised to ensure that all the required equipment and materials and a suitable working area is made available to suit the assessment and the workplace. Assessment must occur under standard and authorised work practices, safety requirements and environmental constraints. Assessment is to comply with relevant appropriate standard requirements. Applicants must have access to: • personal protective equipment (PPE) for the purpose of the Performance Assessment • appropriate safety equipment is safe condition • Appropriate rigging equipment, associated equipment associated plant in safe condition as described in the endorsed assessment instrument • communication equipment (e.g. radios) where applicable • appropriate materials as required for safe erection and dismantling of performance tasks • appropriate materials for conducting fibre rope knots, bends and hitches.
Method of assessment	Assessment must be conducted using the endorsed Assessment Instruments. These Instruments provide advice on their application. The use of **'simulators'** in the assessment of this unit of competency is **not acceptable**. Assessment may be in conjunction with the assessment of other units of competency. Assessment methods must confirm consistency

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EVIDENCE GUIDE

	and accuracy of performance together with application of underpinning knowledge. Assessment must confirm a reasonable inference that competency is not only able to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
Guidance information for assessment	Further information about endorsed Assessment Instruments may be obtained from state/territory OHS regulators.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Hazards may include but are not limited to:	• ground stability (e.g. ground condition, recently filled trenches, slopes) • overhead hazards (e.g. power lines, service pipes) (**NB**: Minimum clearance distance from powerlines or electrical equipment as determined by relevant state authority or electrical supply authority) • traffic (e.g. pedestrians, vehicles, other plant) • insufficient lighting • environmental conditions (e.g. wind, lightning, storms) • other specific hazards (e.g. dangerous materials).
Hazard control measures:	Refers to the systematic process of eliminating or reducing the risk to personnel and property through the application of controls. It includes the application of the hierarchy of control, the six-step preference of control measures to manage and control risk:

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RANGE STATEMENT

	• elimination • substitution • isolation • engineering control measures • using safe work practices • personal protective equipment.
Appropriate standards may include:	• codes of practice • legislation • Australian Standards • manufacturer's specifications • industry standards (where applicable).
Site information may include but is not limited to:	• local conditions such as access and egress • work method statements • site-specific job safety analyses and other site specific documentation as required • task plans /schedules and structural plans.
Forces and loads may include but are not limited to:	• dead loads • live loads • static load • dynamic loads • wind loads.
Associated plant may include but is not limited to:	• gin poles • flying foxes • shear legs • cable ways • guyed derricks • structures, and • suspended scaffolds • fabricated hung scaffolds.
Appropriate personnel may include but not limited to:	• engineers • supervisors • colleagues • managers who are authorised to take responsibility for the workplace or operations.
Rigging equipment may include but is not limited to:	• scaffolds • elevated work platforms • stages • personnel box • cantilevered crane loading platforms • mast climbers

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RANGE STATEMENT

	• safety screens and shutters
	• cranes including but not limited to:
	  • non-slewing cranes
	  • mobile slewing cranes
	  • vehicle loading cranes
	  • tower cranes
	  • self-erecting tower cranes
	  • portal boom cranes
	  • derrick cranes
	  • bridge and gantry.

Associated equipment may include but not limited to:	• all associated equipment at the basic and intermediate rigging level.
Procedures may include but not limited to:	• manufacturer's guidelines (instructions, specifications or checklists) • industry operating procedures, relevant codes of practice • workplace procedures (work instructions, operating procedures, checklists).
Safety equipment may include but not limited to:	• safety harness • energy absorber • lanyard • inertia reel • safety nets • static lines.
Communication methods may include but are not limited to:	• verbal and non-verbal language • written instructions • signage • hand signals • listening • questioning to confirm understanding • appropriate worksite protocol. **NB**: Mobile phones are not to be used for signalling purposes during the rigging process.
Appropriate personnel may include but are not limited to:	• other riggers • doggers • crane operators.
Communication equipment may include but is not limited to:	• fixed channel two-way radios.

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RANGE STATEMENT

Hazard prevention/control measures may include but are not limited to:	• safety tags on electrical switches/isolators • powerlines are insulated • safety observer used inside exclusion zone • power disconnected • traffic barricades and control • pedestrian barricades • trench covers • movement of obstructions • personal protective equipment • adequate illumination.
Ground suitability may include but not limited to:	• rough uneven ground • backfilled ground • soft soils • hard compacted soil • rock • bitumen • concrete • suspended concrete floors • building roofs • landings • ground bearing pressure.
Temporary connections may include but not limited to:	• knots • bends • hitches • whipping.
Flexible Steel Wire Rope (***FSWR***) ***includes***:	• identification, uses and connections. May include termination for: • static lines • guys • purchase systems • lashing • cranes • hoist and winch ropes.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCLSF2001A Licence to erect, alter and dismantle scaffolding basic level

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit specifies the outcomes required to erect, alter and dismantle scaffolding at the basic level, consisting of scaffolding work connected with the operation or use of modular or pre-fabricated scaffolds, cantilevered materials hoists with a maximum working load of 500kg, ropes and gin wheels, safety nets and static lines, and bracket scaffolds (tank and formwork) for licensing purposes.

Application of the Unit

Application of the unit

This unit covers the scope of work to plan the job, select and inspect equipment, set up task, erect scaffold and scaffold equipment and dismantle scaffold and scaffold equipment.

This unit is based upon the National Standard for Licensing Persons Performing High Risk Work.

This unit in its current form it state and territory licensing requirements. Any alteration will result in a unit which is not acceptable to regulators for the purpose of licensing.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units

Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan job.	1.1. Task to be undertaken is assessed. 1.2. Potential workplace ***hazards*** are identified. 1.3. ***Hazard control measures*** are identified consistent with ***appropriate standards*** to ensure the safety of personnel and equipment. 1.4. Site information is obtained. 1.5. ***Scaffold***, ***associated equipment*** and ***scaffolding equipment*** are identified from site information and in consultation with ***appropriate personnel*** (where applicable). 1.6. ***Safety equipment*** is identified. 1.7. All ***forces and loads*** exerted on and by the scaffold and/or scaffolding equipment are determined and calculated. 1.8. Appropriate ***communication methods*** are identified with appropriate personnel.
2. Select and inspect plant and equipment.	2.1. Scaffold, associated equipment and scaffold equipment are selected and inspected according to ***procedures*** and site information. 2.2. Safety equipment is selected and inspected according to procedures. 2.3. All defective Scaffold, associated equipment, scaffold equipment and safety equipment are isolated according to procedures. 2.4. All defective Scaffold, associated equipment, scaffold equipment and safety equipment are reported and recorded according to procedures. 2.5. ***Communication equipment*** is selected and inspected for serviceability (where applicable).
3. Set up task	3.1. Appropriate ***hazard prevention/control measures*** are applied to the work area according to procedures. 3.2. Ground suitability is checked. 3.3. Appropriate footings are prepared to support scaffold and scaffold equipment according to procedures and the appropriate standard. 3.4. Scaffold and scaffold equipment are prepared for erection according to procedures and the appropriate standard. 3.5. Safety equipment is fitted and secured according to procedures (where applicable).

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ELEMENT	PERFORMANCE CRITERIA
	3.6. Scaffold and scaffold equipment are positioned for work application and ***stability*** according to procedures and the appropriate standard.
4. Erect scaffold and scaffold equipment.	4.1. Scaffold and scaffold equipment are erected according to procedures and the appropriate standard.
	4.2. Work is conducted safely at heights including safe and effective use of safety equipment.
	4.3. Scaffold and scaffold equipment are erected consistent with site information.
	4.4. Appropriate communication methods are used to coordinate the tasks.
	4.5. Completed tasks are inspected for compliance with the appropriate standard.
	4.6. Handover certificate is completed as required and handed to appropriate personnel.
	4.7. Excess materials from the work area are removed (where applicable).
5. Dismantle scaffold and scaffold equipment.	5.1. Scaffold and scaffold equipment are dismantled according to procedures and the appropriate standard.
	5.2. Work is conducted safely at heights including safe and effective use of safety equipment.
	5.3. Scaffold, associated equipment and scaffold equipment are inspected for damage and defects.
	5.4. All damaged and defective scaffold, associated equipment and scaffold equipment are tagged and isolated according to procedures.
	5.5. Hazard prevention/control measures are removed (where appropriate).
	5.6. All damaged and defective scaffold, associated equipment and scaffold equipment are reported and recorded according to procedures and appropriate action taken.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

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REQUIRED SKILLS AND KNOWLEDGE

Required skills

Required skills for this unit are:

- ability to calculate Safe Working Load (SWL) and Working Load Limit (WLL)
- ability to erect scaffold within the scope of the basic scaffolder
- ability to erect, level, plumb and stabilise cantilever hoists and scaffolds
- ability to interpret manufacturer's specifications for plant and equipment
- ability to work safely at heights
- ability to set up fall arrest systems, including safety nets
- ability to work safely in confined spaces
- accurate interpretation of basic structural charts and structural plans
- applying methods for making temporary connection using fibre ropes
- correct application of all scaffolding equipment
- methods for making temporary connection of guy ropes and static lines using Flexible Steel Wire Rope (FSWR)
- verify problems and equipment faults and demonstrate appropriate response.

Required knowledge

Required knowledge for this unit is:

- use of appropriate mathematical procedures for estimation and measurement of loads Commonwealth, state or territory OHS legislation and local government regulations, including standards and codes of practice relevant to the full range of techniques for undertaking basic scaffolding activities
- knowledge of principles relating to plant and equipment stability
- knowledge of types of scaffolding and their application
- knowledge of scaffolding erection and dismantling techniques
- knowledge of types of hoists, plant and equipment associated with basic scaffolding and their use/s
- risk assessment and control, including understanding of the hierarchy of control
- estimation of bearing pressures of the full range of soil types and associated ground conditions for setting up plant and equipment
- load capabilities of different types of scaffolding constructions
- understanding and application of organisational and workplace standards, requirements, policies and procedures for scaffolding
- safety equipment applicable to scaffolding
- understanding and application of the inspection and maintenance requirements for basic scaffold, associated equipment and scaffold equipment
- uses and limitations of tools and equipment, appropriate to scaffolding tasks and activities.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Successful assessment of this unit meets the competency requirement of the National Standard for licensing Persons Performing High Risk Work.

State/Territory OHS regulators have mandated the use of Assessment Instruments and Instructions for Assessment endorsed by the national body responsible for OHS matters for the assessment of this unit.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- comply with OHS licensing requirements.
- effectively communicate and work safely with others in the work area.
- effectively apply risk assessment and hazard management procedures at a basic scaffolder level.
- effectively complete the planning, erection and dismantling of a scaffolding system, in accordance with procedures, including a minimum of erect and dismantle:
  - Modular Scaffold with return and ladder access and platform brackets (hop-up brackets)
  - Bracket Scaffold
  - Mobile Scaffold
  - gin wheel
  - Cantilever Hoist
  - safety net and static line
  - safety screen

Scaffold to be of a minimum height of at least 5.0 metres above the supporting surface with full edge protection (includes safety screen) for each work platform including toe boards and handrails.

- correctly demonstrate fibre rope bends and hitches.

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EVIDENCE GUIDE

	• effectively conduct pre and post operational checks of basic scaffolding. • complete handover certificate as required.

Context of and specific resources for assessment	• Assessment of the safe and effective application of knowledge and skill to workplace tasks (performance) must be undertaken using the National OHS endorsed Assessment Instrument
	• Assessment of performance must be undertaken either in the workplace or in a realistically simulated workplace setting
	• .Assessors must ensure that the assessment in the workplace is organised to ensure that all the required equipment and materials and a suitable working area is made available to suit the assessment and the workplace
	• Assessment must occur under standard and authorised work practices, safety requirements and environmental constraints for basic scaffolding
	• Applicants must have access to:
	  • personal protective equipment (PPE) for the purpose of the Performance Assessment
	  • appropriate safety equipment in safe condition
	  • appropriate scaffolding and associated scaffolding equipment
	  • communication equipment (e.g. fixed channel two way radios) where applicable
	  • appropriate personnel to assist with the erecting and dismantling of scaffold and scaffold equipment.

Method of assessment	Assessment must be conducted using the national OHS endorsed Assessment Instruments. These Instruments provide advice on their application. Assessment may be in conjunction with the assessment of other units of competency. The use of **'simulators'** in the assessment of this unit of competency is **not acceptable**. Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge.

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EVIDENCE GUIDE

	Assessment must confirm a reasonable inference that competency is not only able to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
Guidance information for assessment	Further information about endorsed Assessment Instruments may be obtained from state/territory OHS regulators.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Hazards may include but not limited to:	• ground conditions (e.g. ground bearing pressure/s, back filled trenches, underground services, slopes) • overhead hazards (e.g. power lines, service pipes) (minimum clearance distance from powerlines or electrical equipment as determined by relevant state authority or electrical supply authority) • traffic (e.g. pedestrians, vehicles, other plant) • insufficient lighting • environmental conditions (e.g. wind, lightning, storms) • other site specific hazards (e.g. hazardous materials).
Hazard control measures:	Refers to the systematic process of eliminating or reducing the risk to personnel and property through the application of controls. It includes the application of the hierarchy of control, the six-step preference of control measures to manage and control risk: • elimination

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RANGE STATEMENT

	• substitution • isolation • engineering control measures • using safe work practices • personal protective equipment.
Appropriate standards may include:	• codes of practice • legislation • Australian Standards • manufacturer's specifications • industry standards (where applicable).
Site Information may include, but not be limited to:	• local conditions such as access and egress • work method statements • site-specific job safety analyses and other documentation as required • task plans.

Scaffold may include but not limited to:	• mobile scaffolding
	• bracket scaffolding
	• modular scaffolding, including:
	  • steel
	  • fibreglass and
	  • aluminium frame scaffolding
	• prefabricated scaffolding.

Associated equipment may include but not limited to:	• planks
	• flexible steel wire rope and fittings.
	NB: including identification, uses and connections which may include termination for static lines and guys for cantilever hoists.
	• ladders
	• tie tubes and fittings
	• fibre rope
	NB: including identification and uses (natural and synthetic), and connections associated with bends and hitches.
	• stairways and screening
	• hand tools, including, but not limited to:
	  • box spanners
	  • hammers
	  • spirit levels
	  • tape measures

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RANGE STATEMENT

	• scaffold belts • podgers • hammers • wire nips • wrenches • torpedo levels • shovels • spanners • cutters • hammer drills • sledge hammers • wheel barrows and • relevant maintenance equipment.
Scaffolding equipment may include but not limited to:	• materials hoists • gin wheels • safety nets • static lines and fittings.
Appropriate personnel may include, but are not limited to:	• supervisors • colleagues • managers who are authorised to take responsibility for the workplace or operations • other scaffolders • other site personnel as applicable.
Safety equipment may include but not limited to:	• safety harness • energy absorber • lanyard • inertia reel.
Forces and Loads may include, but are not limited to:	• dead loads • live loads • static load • dynamic loads • wind loads.
Communication Methods may include but not limited to:	• verbal and non-verbal language • written instructions • signage • communication signals • listening • questioning to confirm understanding, and appropriate worksite protocol.

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RANGE STATEMENT

Procedures may include but not limited to:	• manufacturer's guidelines (instructions, specifications or checklists) • industry operating procedures, relevant codes of practice • workplace procedures (work instructions, operating procedures, checklists) • reporting and recording procedures such as e.g. equipment defect/s.
Communication equipment may include but is not limited to:	• fixed frequency two way radios • mobile phones.
Hazard prevention/control measures may include but not limited to:	• safety tags on electrical switches/isolators • safety observer used inside exclusion zone (e.g. Spotter), to include the use of power line warning systems (e.g. Tiger tails) • power disconnected by competent authority where applicable • traffic and pedestrian barricades and controls • safe and adequate access / egress is established • personal protective equipment • adequate illumination.
Ground suitability may include but not limited to:	• rough uneven ground • backfilled ground • soft soils • hard compacted soil • rock • bitumen • concrete.
Stability may include but is not limited to:	• ground bearing pressure • sole plates/boards • screw jacks • levelling • ties/guys.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCLSF3001A Licence to erect, alter and dismantle scaffolding intermediate level

Modification History

Not Applicable

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Unit Descriptor

Unit descriptor

This unit specifies the outcomes required to erect, alter and dismantle scaffolding at the Intermediate level which includes use and operation of Cantilevered crane-loading platforms, Cantilevered and spurred scaffolds, Barrow ramps and sloping platforms, perimeter safety screens and shutters Mast climbers, and tube and coupler scaffolds (including tube and coupler covered ways and gantries) for licensing purposes.

Application of the Unit

Application of the unit

This unit covers the scope of work to plan the job, select and inspect equipment, set up task, erect scaffold and scaffold equipment and dismantle scaffold and scaffolding equipment.

This unit is based upon the National Standard for Licensing Persons Performing High Risk Work.

This unit in its current form meets state and territory licensing requirements. Any alteration will result in a unit which is not acceptable to regulators for the purpose of licensing.

This unit has a pre-requisite requirement. This requirement may be met by either the successful completion of the unit *CPCCLSF2001A Licence to erect, alter and dismantle scaffolding basic level* or holding a valid licence for basic scaffolding.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units

CPCCLSF2001A	Licence to erect, alter and dismantle scaffolding basic level

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Prerequisite units

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan job.	1.1. Task to be undertaken is assessed. 1.2. Potential workplace ***hazards*** are identified. 1.3. ***Hazard control measures*** are identified consistent with ***appropriate standards*** to ensure the safety of personnel and equipment. 1.4. Site information is obtained. 1.5. ***Scaffold***, ***associated equipment*** and ***scaffold equipment*** are identified from site information and in consultation with appropriate ***personnel*** (where applicable). 1.6. ***Safety equipment*** is identified. 1.7. All ***forces and loads*** exerted on and by the scaffold and/or scaffolding equipment are determined and calculated. 1.8. Appropriate ***communication methods*** are identified with appropriate personnel.
2. Select and inspect equipment.	2.1. Scaffold, associated equipment and scaffold equipment are selected and inspected according to ***procedures*** and site information. 2.2. Safety equipment is selected and inspected according to procedures. 2.3. All defective scaffold, associated equipment, scaffold equipment and safety equipment are isolated according to procedures. 2.4. All defective scaffold, associated equipment, scaffold equipment and safety equipment are reported and recorded according to procedures. 2.5. ***Communication equipment*** is selected and inspected for serviceability (where applicable).
3. Set up task.	3.1. Appropriate ***hazard prevention/control measures*** are applied to the work area according to procedures. 3.2. Ground suitability is checked. 3.3. Appropriate footings are prepared to support scaffold and scaffold equipment according to procedures and the appropriate standard. 3.4. Scaffold and scaffold equipment are prepared for erection 3.5. Fit safety equipment and secure according to procedures (where applicable). 3.6. Scaffold and scaffold equipment are positioned for

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ELEMENT	PERFORMANCE CRITERIA
	work application and ***stability*** according to procedures and the appropriate standard.
4. Erect scaffold and scaffolding equipment.	4.1. Scaffold and scaffold equipment are erected according to procedures and the appropriate standard.
	4.2. Work is conducted safely at heights including safe and effective use of safety equipment.
	4.3. Scaffold and scaffold equipment are erected consistent with site information.
	4.4. Appropriate communication methods are used to coordinate the tasks.
	4.5. Completed tasks are inspected for compliance with the appropriate standard.
	4.6. Handover certificate is completed as required and handed to appropriate personnel.
	4.7. Excess materials from the work area are removed (where applicable).
5. Dismantle scaffold and scaffolding equipment.	5.1. Scaffold and scaffold equipment are dismantled according to procedures and the appropriate standard.
	5.2. Work is conducted safely at heights including safe and effective use of safety equipment.
	5.3. Scaffold, associated equipment and scaffold equipment are inspected for damage and defects.
	5.4. All damaged and defective scaffold, associated equipment and scaffold equipment are tagged and isolated according to procedures.
	5.5. Hazard prevention/control measures are removed (where appropriate).
	5.6. All damaged and defective scaffold, associated equipment and scaffold equipment are reported and recorded according to procedures and appropriate action taken.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

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REQUIRED SKILLS AND KNOWLEDGE

Required skills

Required skills for this unit are:

- ability to erect scaffold and scaffolding equipment within the scope of the intermediate scaffolder
- ability to erect, level, plumb and stabilise scaffolds and scaffold equipment within the scope of the intermediate scaffolder
- ability to interpret manufacturer's specifications for plant and equipment
- ability to work safely at heights
- accurate interpretation of basic structural charts and structural plans
- correct application of all scaffolding equipment
- verify problems and equipment faults and demonstrate appropriate response.

Required knowledge

Required knowledge for this unit is:

- use of appropriate mathematical procedures for estimation and measurement of loads
- Commonwealth, state or territory OHS legislation and local government regulations, including standards and codes of practice relevant to the full range of techniques for undertaking intermediate scaffolding activities
- knowledge of principles relating to plant and equipment stability
- knowledge of types of scaffolding and their application
- knowledge of scaffold and scaffold equipment erection and dismantling techniques
- knowledge of types of scaffold and scaffold equipment, associated with intermediate scaffolding and their use/s
- risk assessment and control, including understanding of the hierarchy of control
- load capabilities of different types of scaffolding constructions
- understanding and application of organisational and workplace standards, requirements, policies and procedures for scaffolding
- application of safety equipment applicable to scaffolding
- understanding and application of the inspection and maintenance requirements for intermediate scaffold, associated equipment and scaffold equipment
- uses and limitations of tools and equipment, appropriate to scaffolding tasks and activities.

Evidence Guide

EVIDENCE GUIDE

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EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	Successful assessment of this unit meets the competency requirement of the National Standard for licensing Persons Performing High Risk Work. State/Territory OHS regulators have mandated the use of Assessment Instruments and Instructions for Assessment endorsed by the national body responsible for OHS matters for the assessment of this unit.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to:
	• Effectively communicate and work safely with others in the work area.
	• Effectively apply risk assessment and hazard management procedures at an intermediate scaffolder level.
	• Effectively complete the planning, erection and dismantling of scaffolding systems, in accordance with procedures, including a minimum of erect and dismantle the following:
	  • Cantilevered and spurred scaffolds
	  • Barrow ramps and/ or sloping platforms
	  • Tube and coupler scaffolds
	  • Cantilevered crane-loading platforms
	  • Mast climbers
	
	Cantilevered, spurred and tube and coupler scaffolds to be of a minimum height of 5.0 metres above the supporting surface with full edge protection, for each work platform including toe boards and handrails.
	• Apply safety screen to tube and coupler scaffold.
	• Effectively conduct compliance inspections of scaffold and scaffold equipment for intermediate scaffolding.
	• Complete handover certificate as required.

Context of and specific	• Assessment of the safe and effective

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EVIDENCE GUIDE

resources for assessment	application of knowledge and skill to workplace tasks (performance) must be undertaken using the National OHS endorsed Assessment Instrument.
	• Assessment of performance must be undertaken either in the workplace or in a realistically simulated workplace setting.
	• Assessors must ensure that the assessment in the workplace is organised to ensure that all the required equipment and materials and a suitable working area is made available to suit the assessment and the workplace.
	• Assessment must occur under standard and authorised work practices, safety requirements and environmental constraints for intermediate scaffolding.
	• Applicants must have access to:
	  • personal protective equipment (PPE) for the purpose of the Performance Assessment
	  • appropriate safety equipment in safe condition
	  • appropriate scaffold and scaffold equipment in safe condition
	  • site information as described in the mandated assessment instrument
	  • communication equipment (e.g. fixed channel two way radios) where applicable
	  • appropriate personnel to assist with the erecting and dismantling of scaffold and scaffold equipment.

Method of assessment	Assessment must be conducted using the national OHS endorsed Assessment Instruments. These Instruments provide advice on their application. Assessment may be in conjunction with the assessment of other units of competency. The use of **'simulators'** in the assessment of this unit of competency is **not acceptable**. Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge. Assessment must confirm a reasonable inference that competency is not only able to be satisfied

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EVIDENCE GUIDE

	under the particular circumstance, but is able to be transferred to other circumstances.
Guidance information for assessment	Further information about endorsed assessment instruments may be obtained from state/territory OHS regulators.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Hazards may include but not limited to:	• ground conditions (e.g. ground bearing pressure/s, back filled trenches, underground services, slopes) • overhead hazards (e.g. power lines, service pipes) (minimum clearance distance from powerlines or electrical equipment as determined by relevant state authority or electrical supply authority.) • traffic (e.g. pedestrians, vehicles, other plant) • insufficient lighting • environmental conditions (e.g. wind, lightning, storms) • other site specific hazards (e.g. hazardous materials).
Hazard control measures:	Refers to the systematic process of eliminating or reducing the risk to personnel and property through the application of controls. It includes the application of the hierarchy of control, the six-step preference of control measures to manage and control risk: • elimination • substitution • isolation

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RANGE STATEMENT

	• engineering control measures • using safe work practices • personal protective equipment.
Appropriate standards may include:	• codes of practice • legislation • Australian Standards • manufacturer's specifications • industry standards (where applicable).
Site Information may include, but not limited to:	• local conditions such as access and egress • work method statements • site-specific job safety analyses and other documentation as required • task plans.
Scaffold may include but not limited to:	• all scaffolds at the basis level • cantilevered and spurred scaffolds • barrow ramps and sloping platforms • tube and coupler scaffolds (including tube and coupler covered ways and gantries) • cantilever loading platforms.
Associated equipment may include but not limited to:	• all associated equipment from basic scaffolding level • independent adjustable props.
Scaffold equipment may include but not limited to:	• all scaffold equipment at the basic level • mast climbers • screen and shutters.
Appropriate personnel may include, but are not limited to:	• supervisors • colleagues • managers who are authorised to take responsibility for the workplace or operations • other scaffolders • other site personnel as applicable.
Safety equipment may include but not limited to:	• safety harness • energy absorber • lanyard • inertia reel.
Forces and Loads may include, but are not limited to:	• dead loads • live loads • static load • dynamic loads • wind loads.

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RANGE STATEMENT

Communication Methods may include but not limited to:	• verbal and non-verbal language • written instructions • signage • communication signals • listening • questioning to confirm understanding, and appropriate worksite protocol.
Procedures may include but not limited to:	• manufacturer's guidelines (instructions, specifications or checklists) • industry operating procedures, relevant codes of practice • workplace procedures (work instructions, operating procedures, checklists) • reporting and recording procedures such as e.g. scaffold and scaffold equipment defects.
Communication equipment may include but not limited to:	• fixed frequency two way radios • mobile phones.
Hazard prevention/control measures may include but not limited to:	• safety tags on electrical switches/isolators • safety observer used inside exclusion zone (e.g. Spotter), to include the use of power line warning systems (e.g. Tiger tails) • power disconnected by competent authority where applicable. • traffic and pedestrian barricades and controls • safe and adequate access / egress is established • personal protective equipment • adequate illumination.
Ground suitability may include but not limited to:	• rough uneven ground • backfilled ground • soft soils • hard compacted soil • rock • bitumen • concrete.
Stability may include but not limited to:	• ground bearing pressure • sole plates/boards • screw jacks • levelling • ties/guys.

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Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCLSF4001A Licence to erect, alter and dismantle scaffolding advanced level

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit specifies the outcomes required to erect, alter and dismantle scaffolding at the Advanced level. Scaffolding consists of all intermediate scaffolding work including all other scaffolding work connected with the use and operation of Hung scaffolds and Suspended scaffolds for licensing purposes.

Application of the Unit

Application of the unit

This unit covers the scope of work to plan the job, select and inspect equipment, set up task, erect scaffold and scaffold equipment and dismantle scaffold and scaffolding equipment.

This unit is based upon the National Standard for Licensing Persons Performing High Risk Work.

This unit in its current form meets state and territory licensing requirements. Any alteration will result in a unit which is not acceptable to regulators for the purpose of licensing.

This unit has a pre-requisite requirement. This requirement may be met by either the successful completion of the unit *CPCCLSF3001A Licence to erect, alter and dismantle scaffolding intermediate level* or holding a valid licence for intermediate scaffolding.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units

CPCCLSF3001A	Licence to erect, alter and dismantle scaffolding intermediate level

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan job.	1.1. Task to be undertaken is assessed. 1.2. Potential workplace ***hazards*** are identified. 1.3. ***Hazard control measures*** are identified consistent with ***appropriate standards*** to ensure the safety of personnel and equipment. 1.4. Site information is obtained. 1.5. Scaffold, associated equipment and scaffold equipment are identified from site information in consultation with appropriate personnel. 1.6. ***Safety equipment*** is identified. 1.7. All ***forces and loads*** exerted on and by the scaffold and/or scaffolding equipment are determined and calculated. 1.8. Appropriate ***communication methods*** are identified with appropriate personnel.
2. Select and inspect equipment.	2.1. Scaffold, associated equipment and scaffold equipment are selected and inspected according to procedures and site information. 2.2. Safety equipment is selected and inspected according to ***procedures***. 2.3. All defective scaffold, associated equipment and scaffold equipment are isolated according to procedures. 2.4. All defective scaffold, associated equipment, scaffold equipment and safety equipment are reported and recorded according to procedures. 2.5. ***Communication equipment*** is selected and inspected for serviceability (where applicable).
3. Set up task.	3.1. Appropriate ***hazard prevention/control measures*** are applied to the work area according to procedures. 3.2. Scaffold and scaffold equipment are prepared for erection according to procedures. 3.3. Fit safety equipment and secure according to procedures (where applicable).
4. Erect scaffold and scaffolding equipment.	4.1. Scaffold and scaffold equipment are erected according to procedures and the appropriate standard. 4.2. Work is conducted safely at heights including safe and effective use of safety equipment. 4.3. Scaffold and scaffold equipment are erected

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ELEMENT	PERFORMANCE CRITERIA
	consistent with site information.
	4.4. Appropriate communication methods are used to coordinate the tasks.
	4.5. Completed tasks are inspected for compliance with the appropriate standard.
	4.6. Handover certificate is completed as required and handed to appropriate personnel.
	4.7. Excess materials from the work area are removed (where applicable).
5. Dismantle scaffold and scaffolding equipment.	5.1. Scaffold and scaffold equipment is dismantled according to procedures and the appropriate standard.
	5.2. Work is conducted safely at heights including safe and effective use of safety equipment.
	5.3. Scaffold, associated equipment and scaffold equipment are inspected for damage and defects.
	5.4. All damaged and defective scaffold, associated equipment and scaffold equipment is tagged and isolated in accordance with procedures.
	5.5. Hazard prevention/control measures are removed (where appropriate).
	5.6. All damaged and defective scaffold, associated equipment and scaffold equipment are reported and recorded according to procedures and appropriate action taken.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to erect scaffold and scaffold equipment within the scope of the advanced scaffolder
- ability to erect, level, plumb and stabilise scaffolds and scaffold equipment within the scope of the advanced scaffolder
- ability to work safely at heights

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REQUIRED SKILLS AND KNOWLEDGE

- ability to interpret manufacturer's specifications for plant and equipment
- accurate interpretation of structural charts and structural plans
- correct application of all scaffolding equipment
- verify problems and equipment faults and demonstrate appropriate response.

Required knowledge

Required knowledge for this unit is:

- use of appropriate mathematical procedures for estimation and measurement of loads
- Commonwealth, state or territory OHS legislation and local government regulations, including standards and codes of practice relevant to the full range of techniques for undertaking advanced scaffolding activities
- knowledge of principles relating to plant and equipment stability
- knowledge of types of scaffolding and their application
- knowledge of scaffold and scaffold equipment erection and dismantling techniques
- knowledge of types scaffold and scaffold equipment, associated with advanced scaffolding and their use/s
- risk assessment and control, including understanding of the hierarchy of control
- load capabilities of different types of scaffolding constructions
- understanding and application of organisational and workplace standards, requirements, policies and procedures for scaffolding
- application of safety equipment applicable to scaffolding
- understanding and application of the inspection and maintenance requirements for advanced scaffold, associated equipment and scaffold equipment
- uses and limitations of tools and equipment, appropriate to scaffolding tasks and activities.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Successful assessment of this unit meets the competency requirement of the National Standard for licensing Persons Performing High Risk Work.

State/Territory OHS regulators have mandated the use of Assessment Instruments and Instructions for Assessment endorsed by the national body responsible for OHS matters for the assessment of this unit.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- Effectively communicate and work safely with others in the work area.
- Effectively apply risk assessment and hazard management procedures at an advanced scaffolder level.
- Effectively complete the planning, erection and dismantling of scaffolding systems, in accordance with procedures, including a minimum of erection and dismantling of:
  - a hung scaffold, and
  - a suspended scaffold.

Hung scaffold means a scaffold that is hung from another structure and that is not capable of being raised or lowered when in use.

Suspended scaffold means a scaffold incorporating a suspended platform that is capable of being raised or lowered when in use.

- Effectively conduct compliance inspections of scaffold and scaffold equipment for advanced scaffolding.
- Complete handover certificate as required

Context of and specific resources for assessment

- Assessment of the safe and effective application of knowledge and skill to workplace tasks (performance) must be undertaken using the National OHS endorsed

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EVIDENCE GUIDE

	Assessment Instrument
	• Assessment of performance must be undertaken either in the workplace or in a realistically simulated workplace setting
	• .Assessors must ensure that the assessment in the workplace is organised to ensure that all the required equipment and materials and a suitable working area is made available to suit the assessment and the workplace
	• Assessment must occur under standard and authorised work practices, safety requirements and environmental constraints for basic scaffolding
	• Applicants must have access to:
	  • personal protective equipment (PPE) for the purpose of the Performance Assessment
	  • appropriate safety equipment in safe condition
	  • appropriate scaffolding and scaffold equipment in safe condition
	  • site information as described in the mandated assessment instrument
	  • communication equipment (e.g. fixed channel, two-way radios) where applicable
	  • appropriate personnel to assist with the erecting and dismantling of scaffold and scaffold equipment.

Method of assessment	Assessment must be conducted using the national OHS endorsed Assessment Instruments. These Instruments provide advice on their application. Assessment may be in conjunction with the assessment of other units of competency. The use of **'simulators'** in the assessment of this unit of competency is **not acceptable**. Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge. Assessment must confirm a reasonable inference that competency is not only able to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.

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EVIDENCE GUIDE

Guidance information for assessment	Further information about endorsed Assessment Instruments may be obtained from state/territory OHS regulators.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Hazards may include but not limited to:	• overhead hazards (e.g. power lines, service pipes) (minimum clearance distance from powerlines or electrical equipment as determined by relevant state authority or electrical supply authority) • traffic (e.g. pedestrians, vehicles, other plant) • insufficient lighting • environmental conditions (e.g. wind, lightning, storms) • other site specific hazards (e.g. hazardous materials).
Hazard control measures:	Refers to the systematic process of eliminating or reducing the risk to personnel and property through the application of controls. It includes the application of the hierarchy of control, the six-step preference of control measures to manage and control risk: • elimination • substitution • isolation • engineering control measures • using safe work practices • personal protective equipment.
Appropriate standards may	• codes of practice • legislation

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RANGE STATEMENT

include:	• Australian Standards • manufacturer's specifications • industry standards (where applicable).
Site Information may include, but not limited to:	• local conditions such as access and egress • work method statements • site-specific job safety analyses and other documentation as required.
Scaffold may include but not limited to:	• all scaffold at the basis and intermediate levels • hung scaffolds, including scaffolds hanging from tubes, wire ropes or chains • suspended scaffolds.
Associated equipment may include but not limited to:	• all associated equipment at the basic and intermediate levels • counterweights • prefabricated needles.
Scaffolding equipment may include but not limited to:	• all scaffold equipment at the basis and intermediate level • swinging stages.
Appropriate personnel may include, but is not limited to:	• supervisors • colleagues • managers who are authorised to take responsibility for the workplace or operations • other scaffolders • other site personnel as applicable.
Safety equipment may include but is not limited to:	• safety harness • energy absorber • lanyard • inertia reel.
Forces and Loads may include, but are not limited to:	• dead loads • live loads • static load • dynamic loads • wind loads.
Communication Methods may include but are not limited to:	• verbal and non-verbal language • written instructions • signage • communication signals • listening • questioning to confirm understanding, and

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RANGE STATEMENT

	appropriate worksite protocol.
Procedures may include but are not limited to:	• manufacturer's guidelines (instructions, specifications or checklists) • industry operating procedures, relevant codes of practice • workplace procedures (work instructions, operating procedures, checklists) • reporting and recording procedures such as e.g. equipment defect/s.
Communication equipment may include but is not limited to:	• fixed frequency radios • mobile phones.
Hazard prevention/control measures may include but are not limited to:	• safety tags on electrical switches/isolators • safety observer used inside exclusion zone (e.g. Spotter), to include the use of power line warning systems (e.g. Tiger tails) • power disconnected by competent authority where applicable. • traffic and pedestrian barricades and controls • safe and adequate access / egress is established • personal protective equipment • adequate illumination.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCLTC4001A Licence to operate a tower crane

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit specifies the outcomes required to operate a tower crane for licensing purposes, and covers a jib or boom/job crane mounted on a tower structure, demountable or permanent, including both horizontal and luffing jib types. This unit does not cover self-erecting tower cranes.

Application of the Unit

Application of the unit

This unit requires the operator to plan the work, conduct routine checks, transfer loads and shut down and secure the crane. This unit requires the operator to plan the work, conduct routine checks, transfer loads and shut down and secure the crane.

This unit is based on the requirements of the National Standard for Licensing Persons Performing High Risk Work.

This unit in its current form meets state and territory licensing requirements. Any alteration will result in a unit, which is not acceptable to regulators for the purpose of licensing.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan work.	1.1. Potential workplace ***hazards*** are identified. 1.2. ***Hazard control measures*** are identified consistent with ***appropriate standards*** to ensure the safety of personnel and equipment. 1.3. The weight of the load is identified and estimated in consultation with ***appropriate personnel***. 1.4. ***Crane*** is ***appropriate*** to the loads and workplace conditions. 1.5. Appropriate paths for the movement of loads in the work area are inspected and determined. 1.6. Appropriate ***communication methods*** are identified with appropriate personnel.
2. Conduct routine checks.	2.1. Crane is accessed in safe manner. 2.2. Crane is visually checked for any damage or defects. 2.3. All ***signage and labels*** are visible and legible according to the appropriate standard. 2.4. Routine pre-operational crane checks are carried out according to ***procedures***. 2.5. All ***controls*** located and identified. 2.6. Crane ***service logbook*** is checked for compliance. 2.7. Crane is started according to procedures and checked for any abnormal noises. 2.8. All ***crane safety devices*** are tested according to procedures. 2.9. Post start operational checks are carried out according to procedures. 2.10. All ***communication equipment*** is checked for serviceability 2.11. All damage and defects are reported and recorded according to procedures and appropriate action taken.
3. Transfer load.	3.1. Determine lifts are within the capacity of the crane. 3.2. Appropriate ***hazard prevention/control measures*** are applied to the work area according to procedures in consultation with appropriate personnel. 3.3. Boom/jib and hoist block is positioned over load following directions from appropriate personnel. 3.4. ***Test lift*** is carried out to procedures. 3.5. Loads are transferred using all ***relevant crane***

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ELEMENT	PERFORMANCE CRITERIA
	movements according to procedures and appropriate standards.
	3.6. All required ***communication signals*** are interpreted correctly according to procedures and the appropriate standard.
	3.7. Crane is operated according to procedures.
	3.8. Load movement is monitored constantly to ensure safety of personnel, load and structural stability.
	3.9. ***Unplanned and/or unsafe situations*** are responded to in line with procedures.
4. Shut down and secure crane.	4.1. Crane is placed in weather vane mode according to procedures (where applicable).
	4.2. Relevant motion locks and brakes are applied (where applicable).
	4.3. Crane and equipment is secured correctly, according to procedures and the appropriate standard.
	4.4. Crane is ***shut down*** according to procedures
	4.5. Routine post-operational checks on crane are carried out, according to procedures.
	4.6. All damage and defects are reported and recorded according to procedures and appropriate action taken.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- accurate recording and maintenance of information relating to crane operations
- communication techniques in the workplace including whistles, hand signals and use of two-way radios
- interpersonal communication skills at a level sufficient to communicate with other site personnel
- loading of data into crane computer (where fitted) and checking of operation to accurately reflect the crane configuration
- operation of a tower crane for the lifting and moving of loads to the safe working

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REQUIRED SKILLS AND KNOWLEDGE

rated capacity in conjunction with other appropriate personnel where required

- risk assessment and hazard control strategies, including hierarchy of control as applied to the positioning and safe operation of the crane (particular awareness of the risks associated with overhead powerlines/electrical cables, wind, etc)
- use and interpretation of crane manufacturer's specifications and data, including load charts to enable the crane to be configured for the load
- verifying problems and equipment faults and demonstrating appropriate response procedures

Required knowledge

Required knowledge for this unit is:

- ability to read and comprehend manufacturer's instructions, procedures and safety signs
- appropriate mathematical procedures for estimation of loads
- commonwealth, state or territory OHS legislation, standards and codes of practice relevant to the full range of processes for the crane class
- organisational and workplace standards, requirements, policies and procedures for conducting operations for the crane class
- understanding of the hierarchy of hazard identification and control
- level of literacy to be able to read and comprehend manufacturer's instructions, procedures and safety signs
- tower crane operating techniques
- procedures for the recording, reporting and maintenance of workplace records and information
- tower crane characteristics and capabilities to allow the operation of the crane to suit the range of loads
- rated capacity and working load limits (including use of crane load charts)
- typical routine problems encountered in the operation of the crane and equipment and adjustments required for correction.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Successful assessment of this unit meets the competency requirement of the National Standard for licensing Persons Performing High Risk Work.

State/Territory OHS regulators have mandated the use of Assessment Instruments and Instructions for Assessment for this unit which have been endorsed by the national body responsible for OHS matters.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- comply with OH&S licensing legislation
- communicate and work safely with others in the work area
- assess risks and management procedures (particular awareness of the risks associated with overhead powerlines/electrical cables, wind, etc)
- operate a tower crane for the lifting and moving of loads to the safe working rated capacity in conjunction with other appropriate personnel
- apply appropriate mathematical procedures for estimation of loads.

Context of and specific resources for assessment

- Assessment of the safe and effective application of knowledge and skill to workplace tasks (performance) must be undertaken using the endorsed Assessment Instrument
- Assessment of performance must be undertaken either in the workplace or in a realistically simulated workplace setting
- Assessors must ensure that the assessment in the workplace is organised to ensure that all the required equipment and materials and a suitable working area is made available to suit the assessment and the workplace
- Assessment must occur under standard and

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EVIDENCE GUIDE

	authorised work practices, safety requirements and environmental constraints
	• Assessment is to comply with relevant appropriate standard requirements
	• Applicants must have access to:
	  • personal protective equipment (PPE) for the purpose of the Performance Assessment.
	  • appropriate tower crane and associated equipment in safe condition
	  • suitable loads as specified by the endorsed assessment instrument
	  • communication equipment (eg. two way radios, whistles, etc)
	  • other appropriate personnel to sling and direct the loads.

Method of assessment	Assessment must be conducted using the endorsed Assessment Instruments. These Instruments provide advice on their application. The use of **'simulators'** in the assessment of this unit of competency is **not acceptable**. Assessment may be in conjunction with the assessment of other units of competency. Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge. Assessment must confirm a reasonable inference that competency is not only able to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.
Guidance information for assessment	Further information about endorsed Assessment Instruments may be obtained from state/territory OHS regulators.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised

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RANGE STATEMENT

wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Hazards may include but not limited to:	• ground stability (e.g. ground condition or slopes for load placement) • overhead hazards (e.g. power lines, service pipes) • insufficient lighting • traffic (e.g. pedestrians, vehicles, plant) • environmental conditions (e.g. wind, lightning, storms, etc) • other specific hazards (e.g. dangerous materials).
Hazard control measures:	Refers to the systematic process of eliminating or reducing the risk to personnel and property through the application of controls. It includes the application of the hierarchy of control, the six-step preference of control measures to manage and control risk: • elimination • substitution • isolation • engineering control measures • using safe work practices • personal protective equipment.
Appropriate standard s may include but not limited to:	• codes of practice • legislation • Australian Standard • manufacturer's specifications • industry standards (where applicable).
Appropriate personnel may include but not limited to:	• riggers • doggers
Crane	Covers a jib or boom/job crane mounted on a tower structure, demountable or permanent, including both horizontal and luffing jib types. NB: Self-erecting tower cranes are excluded from this classification.
Appropriate may include but not	• crane capabilities

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RANGE STATEMENT

limited to:	• environmental conditions (e.g. wind, lightning, storms, etc).
Communication method may include but not limited to:	• verbal and non-verbal language • written instructions • signage • hand signals • listening • questioning to confirm understanding • appropriate worksite protocol.
Signage and labels may include but not limited to:	• crane data plates/labels • load charts • crane decals • control labels.
Procedures may include but not limited to:	• manufacturer's guidelines (instructions, specifications or checklists) • industry operating procedures • workplace procedures (work instructions, operating procedures, checklists).
Controls may include but not limited to:	• luffing levers • hoisting and lowering levers • slewing levers including brake • trolleying levers (where applicable)
Service logbook may include but not limited to:	• any logbook • service book • history record system where the service and maintenance history is kept.
Crane safety devices may include but not limited to:	• audible and visual devices • operator restraint devices • lights.
Communication equipment may include but not limited to:	• two way radios • whistles • bells • buzzers. **NB**: where radio communication equipment is used the transmitting frequencies of the equipment must be selected to prevent interference to or from other radio equipment being used in the vicinity of the crane.
Hazard prevention/control measures may include but not	• safety tags on electrical switches/isolators • powerlines are insulated

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RANGE STATEMENT

limited to:	• safety observer used inside exclusion zone • power disconnected • traffic barricades and control/s • pedestrian controls • trench covers • movement of obstructions • personal protective equipment • adequate illumination.
Test lift	The load is lifted just clear of the lifting plane to allow for checks to be safely made in consultation with appropriate personnel to ensure that: • near capacity loads do not overload the crane • loads of unusual shape or weight distribution are correctly slung • load measuring equipment can be used to verify the calculated weight of the load • all crane equipment is functioning properly • adjustments to the slinging can be made in a safe manner.
Relevant crane movements may include but not limited to:	• luffing • slewing • hoisting and lowering loads • trolleying.
Communication signals may include but not limited to:	• stop - hand • stop - whistle • hoist up - hand • hoist up - whistle • hoist down - hand • hoist down - whistle • luff boom down - hand • luff boom down - whistle • luff boom up - hand • luff boom up - whistle • trolleying out - hand • trolleying out - whistle • trolleying in - hand • trolleying in - whistle • slew left - hand • slew left - whistle • slew right - hand

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RANGE STATEMENT

	• slew right - whistle.
Unplanned and/or unsafe situations may include but not limited to:	• failure/lose of control e.g. slew brakes, hoist drums • failure of equipment e.g. hydraulic system • environmental conditions (e.g. wind, lightning, storms, etc).
Shut Down may include but not limited to:	• boom/jib raised to clear buildings and structures (where applicable) • trolleying hoist block to park position (where applicable) • retracting hoist rope&hook block • idle engine to stabilise temperature • weather vane mode • turning off engine • remove key from ignition • lock and secure cabin (where applicable) • lock and secure platform access hatch.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCLTC4002A Licence to operate a self-erecting tower crane

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit specifies the outcomes required to operate a self-erecting tower crane for licensing purposes, and covers the operation of a crane where the tower structure and boom/jib elements are not disassembled into component sections, which can be transported between sites as a complete unit, and where the erection and dismantling processes are an inherent part of the crane's function.

Application of the Unit

Application of the unit

This unit requires the operator to plan the work, conduct routine checks, transfer loads and shut down and secure the crane.

This unit is based on the requirements of the National Standard for Licensing Persons Performing High Risk Work.

This unit in its current form meets state and territory licensing requirements. Any alteration will result in a unit which is not acceptable to regulators for the purpose of licensing.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units

Nil

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Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan work.	1.1. Potential workplace ***hazards*** are identified. 1.2. ***Hazard control measures*** are identified consistent with ***appropriate standards*** to ensure the safety of personnel and equipment. 1.3. Weight of the load is identified and estimated in consultation with ***appropriate personnel***. 1.4. ***Crane*** is ***appropriate*** for the load/s and workplace conditions. 1.5. The appropriate paths for the movement of loads in the work area are inspected and determined. 1.6. Appropriate ***communication methods*** are identified with appropriate personnel.
2. Conduct routine checks.	2.1. Crane is visually checked for any damage or defects. 2.2. Crane is accessed in safe manner (where applicable). 2.3. All ***signage and labels*** are visible and legible according to the ***appropriate standard***. 2.4. Routine pre-operational crane checks are carried out according to procedures. 2.5. All ***controls*** located and identified. 2.6. Crane ***service logbook*** is checked for compliance. 2.7. ***Crane*** is started according to procedures and checked for any abnormal noises. 2.8. All ***crane safety devices*** are tested according to procedures. 2.9. Post start operational checks are carried out according to procedures. 2.10. All ***communication equipment*** is checked for serviceability 2.11. All damage and defects are reported and recorded according to procedures and appropriate action taken.
3. Transfer loads.	3.1. Lifts are determined within the capacity of the crane. 3.2. Appropriate hazard prevention/control measures are applied to the work area according to procedures in consultation with appropriate personnel. 3.3. Boom/jib and hoist block is positioned over load following directions from appropriate personnel. 3.4. ***Test lift*** is carried out to procedures. 3.5. Loads are transferred using all ***relevant crane***

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ELEMENT	PERFORMANCE CRITERIA
	movements according to procedures and appropriate standards.
	3.6. All required ***communication signals*** are interpreted correctly according to procedures and the appropriate standard.
	3.7. Crane is operated according to procedures.
	3.8. Load movement is monitored constantly to ensure safety of personnel, load and crane stability.
	3.9. ***Unplanned and/or unsafe situations*** are responded to in line with procedures.
4. Shut down and secure crane.	4.1. Crane is placed in weather vain mode according to procedures (where applicable).
	4.2. Relevant motion locks and brakes are applied (where applicable).
	4.3. Crane and equipment is secured correctly, according to procedures and the appropriate standard.
	4.4. Crane is ***shut down*** according to procedures
	4.5. Routine post-operational checks on crane are carried out, according to procedures.
	4.6. All damage and defects are reported and recorded according to procedures and appropriate action taken.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- accurate recording and maintenance of information relating to crane operations
- communication techniques in the workplace including whistles, hand signals and use of two-way radios
- interpersonal communication skills at a level sufficient to communicate with other site personnel
- load data into crane computer (where fitted) and check operation to accurately reflect the crane configuration
- operation of a self-erecting tower crane for the lifting and moving of loads to the

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REQUIRED SKILLS AND KNOWLEDGE

safe working rated capacity in conjunction with other appropriate personnel.

- risk assessment and hazard control strategies, including hierarchy of control as applied to the positioning and safe operation of the crane including particular awareness of the risks associated with overhead powerlines/electrical cables, wind, and crane stability
- use and interpretation of crane manufacturer's specifications and data, including load charts and ballast, to enable the crane to be configured for the load
- verify problems and equipment faults and demonstrate appropriate response procedures.

Required knowledge

Required knowledge for this unit is:

- ability to be able to read and comprehend manufacturer's instructions, procedures and safety signs
- appropriate mathematical procedures for estimation of loads
- Commonwealth, state or territory OHS legislation, standards and codes of practice relevant to the full range of processes for the crane class
- organisational and workplace standards, requirements, policies and procedures for conducting operations for the crane class
- understanding of the hierarchy of hazard identification and control
- level of literacy to be able to read and comprehend manufacturer's instructions, procedures and safety signs
- self erecting tower crane operating techniques
- procedures for the recording, reporting and maintenance of workplace records and information
- self-erecting tower crane characteristics and capabilities to allow the operation of the crane to suit the range of loads
- rated capacity and working load limits (including use of crane load charts)
- typical routine problems encountered in the operation of the crane and equipment and adjustments required for correction.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	Successful assessment of this unit meets the competency requirement of the National Standard for licensing Persons Performing High Risk Work. State/Territory OHS regulators have mandated the use of Assessment Instruments and Instructions for Assessment for this unit which have been endorsed by the national body responsible for OHS matters.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with OHS licensing legislation • effectively communicate and work safely with others in the work area • assess risk and management procedures (particular awareness of the risks associated with overhead powerlines/electrical cables, wind and crane stability) • operate a self-erecting tower crane for the lifting and moving of loads to the safe working rated capacity in conjunction with other appropriate personnel • apply standard mathematical procedures for estimation of loads.
Context of and specific resources for assessment	• Assessment of the safe and effective application of knowledge and skill to workplace tasks (performance) must be undertaken using the endorsed Assessment Instrument • Assessment of performance must be undertaken either in the workplace or in a realistically simulated workplace setting • Assessors must ensure that the assessment in the workplace is organised to ensure that all the required equipment and materials and a suitable working area is made available to suit the assessment and the workplace • Assessment must occur under standard and

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EVIDENCE GUIDE

	authorised work practices, safety requirements and environmental constraints
	• Assessment is to comply with relevant appropriate standard requirements
	• Applicants must have access to:
	  • personal protective equipment (PPE) for the purpose of the Performance Assessment.
	  • appropriate self-erecting tower crane and associated equipment in safe condition
	  • suitable loads as specified by the endorsed assessment instrument
	  • communication equipment (eg. two-way radios, whistles, etc)
	  • other appropriate personnel to sling and direct the loads.

Method of assessment	Assessment must be conducted using the endorsed Assessment Instruments. These Instruments provide advice on their application. The use of **'simulators'** in the assessment of this unit of competency is **not acceptable**. Assessment may be in conjunction with the assessment of other units of competency. Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge. Assessment must confirm a reasonable inference that competency is not only able to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.
Guidance information for assessment	Further information about endorsed assessment instruments may be obtained from state/territory OHS regulators.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised

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RANGE STATEMENT

wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Hazards may include but not limited to:	• ground stability (e.g. ground condition or slopes for load placement) • overhead hazards (e.g. power lines, service pipes) • Insufficient lighting • traffic (e.g. pedestrians, vehicles, plant) • environmental conditions (e.g. wind, lightning, storms, etc) • other specific hazards (e.g. dangerous materials).
Hazard control measures:	Refers to the systematic process of eliminating or reducing the risk to personnel and property through the application of controls. It includes the application of the hierarchy of control, the six-step preference of control measures to manage and control risk: • elimination • substitution • isolation • engineering control measures • using safe work practices • personal protective equipment.
Appropriate standards may include:	• codes of practice • legislation • Australian Standards • manufacturer's specifications • industry standards (where applicable).
Appropriate personnel may include but not limited to:	• riggers • doggers.
Crane	Self-erecting tower crane covers the operation of a crane where the tower structure and boom/jib elements are not disassembled into component sections, which can be transported between sites as a complete unit, and where the erection and dismantling processes are an inherent part of the crane's function.

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RANGE STATEMENT

Appropriate may include but is not limited to:	• crane capabilities • environmental conditions (e.g. wind, lightning, storms, etc).
Communication *methods* may include but are not limited to:	• verbal and non-verbal language • written instructions • signage • hand signals • listening • questioning to confirm understanding • appropriate worksite protocol.
Signage and labels may include but not limited to:	• crane data plates/labels • load charts • crane decals • control labels.
Procedures may include but are not limited to:	• manufacturer's guidelines (instructions, specifications or checklists), • industry operating procedures • workplace procedures (work instructions, operating procedures, checklists).
Controls may include but not limited to:	• luffing levers (where applicable) • hoisting and lowering levers • slewing levers including brake • trolley levers (where applicable).
Service logbook may include but is not limited to:	• any logbook • service book • history record system where the service and maintenance history is kept.
Crane safety devices may include but not limited to:	• audible and visual warning devices • operator restraint devices (where applicable) • lights (where applicable).
Communication equipment may include but not limited to:	• two-way radios • whistles • bells • buzzers. **NB**: where radio communication equipment is used the transmitting frequencies of the equipment must be selected to prevent interference to or from other radio equipment being used in the vicinity of the crane.
Hazard prevention/control	• safety tags on electrical switches/isolators

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RANGE STATEMENT

measures may include but are not limited to:	• power lines are insulated • safety observer used inside exclusion zone • power disconnected • traffic barricades and control • pedestrian barricades • trench covers • movement of obstructions • personal protective equipment • adequate lighting • suitable site for the crane • counterweights (ballast).
Test lift	The load is lifted just clear of the lifting plane to allow for checks to be safely made in consultation with appropriate personnel to ensure that: • near capacity loads do not overload the crane • loads of unusual shape or weight distribution are correctly slung • load measuring equipment can be used to verify the calculated weight of the load • all crane equipment is functioning properly • adjustments to the slinging can be made in a safe manner.
Relevant crane movements may include but not limited to:	• luffing (where applicable) • slewing • trolleying • hoisting and lowering loads.
Communication signals may include but not limited to:	• stop - hand • stop - whistle • hoist up - hand • hoist up - whistle • hoist down - hand • hoist down - whistle • luff boom down - hand (where applicable) • luff boom down - whistle (where applicable) • luff boom up - hand (where applicable) • luff boom up - whistle (where applicable) • trolleying out - hand • trolleying out - whistle • trolleying in - hand • trolleying in - whistle

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RANGE STATEMENT

	• slew left - hand • slew left - whistle • slew right - hand • slew right - whistle.
Unplanned and/or unsafe situations may include but not limited to:	• failure/lose of control e.g. slew brake hoist drum • failure of equipment e.g. hydraulic system • environmental conditions (e.g. wind, lightning, storms, etc).
Shut Down may include but not limited to:	• boom/jib slewed to clear buildings and structures (where applicable) • trolleying hoist block to park position (where applicable) • weather vain mode • retracting hoist rope&hook block • idle engine to stabilise temperature • turning off engine • isolating power supply (where applicable) • remove key from ignition/control panel • lock and secure cabin (where applicable).

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCOHS1001A Work safely in the construction industry

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to undertake Occupational Health and Safety (OHS) induction training within the construction industry.

It requires the ability to demonstrate personal awareness of OHS legislative requirements, and the basic principles of risk management and prevention of injury and illness in the construction industry.

Licensing requirements will apply to this unit of competency depending on the regulatory requirements of each jurisdiction.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the basic OHS knowledge required prior to undertaking designated work tasks within any of the sectors within the construction industry. The unit relates directly to the general induction training program specified by the *National Code of Practice for Induction for Construction Work* (ASCC 2007).

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units

Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify OHS legislative requirements.	1.1. Applicable ***OHS legislative requirements*** relevant to own work, role and responsibilities are identified and explained. 1.2. Duty of care requirements are identified. 1.3. Own responsibilities to comply with ***safe work practices*** are identified and explained.
2. Identify construction hazards and control measures.	2.1. Basic principles of risk management are identified. 2.2. ***Common construction hazards*** are identified and discussed. 2.3. ***Measures for controlling*** hazards and risks are identified.
3. Identify OHS communication and reporting processes.	3.1. OHS communication processes, information and documentation are identified and discussed. 3.2. Role of ***designated OHS personnel*** is identified and explained. 3.3. ***Safety signs and symbols*** are identified and explained. 3.4. Procedures and ***relevant authorities*** for reporting hazards, ***incidents*** and injuries are identified.
4. Identify OHS incident response procedures.	4.1. ***General procedures*** for responding to incidents and ***emergencies*** are identified and explained. 4.2. Procedures for accessing first aid are identified. 4.3. Requirements for the selection and use of relevant ***personal protective equipment*** are identified and demonstrated. 4.4. ***Fire safety equipment*** is identified and discussed.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - clarify OHS legislative requirements

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REQUIRED SKILLS AND KNOWLEDGE

- verbally report construction hazards and risks
- ask effective questions
- relay information to others
- discuss OHS issues and information
- comprehension skills to:
  - explain the basic OHS legislative requirements which will be applicable to own work
  - explain the meaning of safety signs and symbols
  - identify common construction hazards
  - discuss the basic principles of risk management.

Required knowledge

Required knowledge for this unit is:

- applicable Commonwealth, State or Territory OHS legislation, regulations, standards, codes of practice and industry standards/guidance notes relevant to own work, role and responsibilities
- basic principles of risk management and assessment for construction work
- common construction hazards
- common construction safety signage and its meanings
- general construction emergency response and evacuation procedures
- general construction work activities that require licenses, tickets or certificates of competency
- general first aid response requirements
- general procedures for raising OHS issues
- general procedures for reporting OHS hazards, accidents, incidents, emergencies, injuries, near misses and dangerous occurrences
- general procedures for responding to hazards, incidents and injuries
- general workers' compensation and injury management requirements
- OHS hierarchy of controls
- OHS responsibilities and rights of duty holders, including:
  - persons in control of construction work/projects
  - employers and self-employed persons
  - supervisors
  - employees
  - designers
  - inspectors
  - manufacturers and suppliers
- own responsibilities to comply with safe work practices relating to:
  - housekeeping

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REQUIRED SKILLS AND KNOWLEDGE

- identification of hazards
- preventing bullying or harassment
- smoking
- use of amenities
- use of drugs and alcohol
- role of OHS committees and representatives
- types of common personal protective equipment and fire safety equipment
- types of OHS information and documentation.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence must confirm personal awareness of the following: • applicable OHS legislative and safety requirements for construction work including duty of care • the range of common construction hazards and procedures for the assessment of risk and application of the hierarchy of control • OHS communication processes, information and documentation including the role of OHS committees and representatives, the meaning of common safety signs and symbols, and procedures for reporting hazards, incidents and injuries • general procedures for responding to incidents and emergencies including evacuation, first aid, fire safety equipment and PPE.
Context of and specific resources for assessment	• Resources must be available to support the program including participant materials and other information or equipment related to the skills and knowledge covered by the program. • It is recommended that the assessment tool designed specifically to support this unit of competency will provide consistency in assessment outcomes. • Where applicable, physical resources should include equipment modified for people with disabilities • Access must be provided to appropriate assessment support when required. • Assessment processes and techniques must be culturally appropriate, and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed • In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge.

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EVIDENCE GUIDE

	Questioning will be undertaken in such a manner as is appropriate to the oracy, language and literacy levels of the operator, any cultural issues that may affect responses to the questions, and reflecting the requirements of the competency and the work being performed.
Method of assessment	Assessment methods may include more than one of the following: • practical assessment • oral questioning • written test • work-based activities • simulated project based activity

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

OHS legislative requirements relate to:	• Australian standards • construction industry OHS standards and guidelines • duty of care • health and safety representatives, committees and supervisors • licences, tickets or certificates of competency • National Code of Practice for Induction Training for Construction Work • national safety standards • OHS and welfare Acts and regulations • safety codes of practice.
Duty of care requirements relate to:	• legal responsibility under duty of care to do everything reasonably practicable to protect others from harm

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RANGE STATEMENT

	• own responsibilities to comply with safe work practices, including activities that require licences, tickets or certificates of competency • relevant state OHS requirements, including employers and self-employed persons, persons in control of the work site, construction supervisors, designers, manufacturers and suppliers, construction workers, subcontractors and inspectors.
Safe work practices include:	• access to site amenities, such as drinking water and toilets • general requirements for safe use of plant and equipment • general requirements for use of personal protective equipment and clothing • housekeeping to ensure a clean, tidy and safer work area • no drugs and alcohol at work • preventing bullying and harassment • smoking in designated areas • storage and removal of debris.
Risk relates to:	• likelihood of a hazard causing injury or harm.
Principles of risk management include:	• assessing the risks involved • consulting and reporting ensuring the involvement of relevant workers • controlling the hazard • identifying hazards • reviewing to identify change or improvement.
Hazard relates to:	• any thing (including an intrinsic property of a thing) or situation with the potential to cause injury or harm.
Common construction hazards include:	• confined spaces • electrical safety • excavations, including trenches • falling objects • hazardous substances and dangerous goods • HIV and other infectious diseases • hot and cold working environments • manual handling • noise • plant and equipment

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RANGE STATEMENT

	• traffic and mobile plant • unplanned collapse • ultraviolet (UV) radiation • working at heights.
Measures for controlling risk to eliminate or minimise hazards in accordance with the hierarchy of control include:	• elimination • substitution • isolation • engineering control • administrative control • personal protective equipment.
OHS communication processes include:	• discussions with OHS representatives • OHS meetings • OHS notices, newsletters, bulletins and correspondence • OHS participative arrangements • processes for raising OHS issues • toolbox talks • workplace consultation relating to OHS issues and changes.
OHS information and documentation includes:	• accident and incident reports • Acts and regulations • Australian standards • codes of practice • construction documentation and plans • emergency information contact • evacuation plans • guidance notes • job safety analyses • labels • material safety data sheets (MSDS) • proformas for reporting hazards, incidents and injuries • reports of near misses and dangerous occurrences • risk assessments • safe work method statements • safety meeting minutes • site safety inspection reports.
Designated OHS personnel includes:	• first aid officers • OHS committee members

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RANGE STATEMENT

	• OHS representatives • supervisors.
Safety signs and symbols include:	• emergency information signs (e.g. exits, equipment and first aid) • fire signs (e.g. location of fire alarms and firefighting equipment) • hazard signs (e.g. danger and warning) • regulatory signs (e.g. prohibition, mandatory and limitation or restriction) • safety tags and lockout (e.g. danger tags, out of service tags).
Relevant authorities include:	• emergency services (e.g. police, ambulance, fire brigade and emergency rescue) • OHS regulatory authority • supervisor.
Incidents include:	• accidents resulting in personal injury or damage to property • near misses or dangerous occurrences which do not cause injury but may pose an immediate and significant risk to persons or property, and need to be reported so that action can be taken to prevent recurrence, for example: • breathing apparatus malfunctioning to the extent that the user's health is in danger • collapse of the floor, wall or ceiling of a building being used as a workplace • collapse or failure of an excavation more than 1.5 metres deep (including any shoring) • collapse or partial collapse of a building or structure • collapse, overturning or failure of the load bearing of any scaffolding, lift, crane, hoist or mine-winding equipment • damage to or malfunction of any other major plant • electric shock. • electrical short circuit, malfunction or explosion • uncontrolled explosion, fire or escape of gas, hazardous substance or steam • any other unintended or uncontrolled incident or event arising from operations carried on at a

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RANGE STATEMENT

	workplace.
General procedures for responding to incidents and emergencies include:	• basic emergency response (keep calm, raise alarm, obtain help) • evacuation • notification of designated OHS personnel and authorities • notification of emergency services (e.g. when and how) • referring to site emergency plans and documentation.
Emergencies include:	• chemical spill • fire • injury to personnel • structural collapse • toxic and/or flammable vapours emission • vehicle/mobile plant accident.
Personal protective equipment includes:	• aprons • arm guards • eye protection • gloves • hard hat • hearing protection • high visibility retro reflective vests • protective, well fitting clothing • respiratory protection • safety footwear • UV protective clothing and sunscreen.
Fire safety equipment includes:	• breathing apparatus • fire blankets • firefighting equipment.

Unit Sector(s)

Unit sector Construction

Co-requisite units

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Co-requisite units Nil

Functional area

Functional area

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CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to carry out OHS requirements through safe work practices at any on or off-site construction workplace. It requires the performance of work in a safe manner through awareness of risks and work requirements, and the planning and performance of safe work practices with concern for personal safety and the safety of others.

Application of the Unit

Application of the unit

This unit of competency covers fundamental OHS necessary to undertake work tasks within any sector in the construction industry. It includes the identification of hazardous materials, including asbestos, and compliance with legislated work safety practices. It does not cover removal of asbestos, which is a licensed activity.

The unit relates directly to the general induction training program specified by the *National Code of Practice for Induction for Construction Work* (ASCC 2007) required to enter a construction work site. Completion of unit CPCCOHS1001A covers this requirement.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and assess risks.	1.1. ***Hazards*** in the work area are identified, assessed and reported to ***designated personnel***. 1.2. Safety risks in the work area are identified, assessed and reported to designated personnel. 1.3. ***Safe work practices***, ***duty of care*** requirements and safe work instructions are followed for controlling risks. 1.4. OHS, hazard, accident or ***incident*** reports are contributed to according to workplace procedures and ***Australian government and state or territory OHS legislation*** and relevant ***information***.
2. Identify hazardous materials and other hazards on work sites.	2.1. ***Hazardous materials*** on a work site are correctly identified and, if appropriate, handled and used according to company and legislated procedures. 2.2. ***Measures for controlling risks*** and construction hazards are applied effectively and immediately. 2.3. Hazardous materials that have safety implications for self and other workers are secured immediately they are identified, using appropriate ***signs and symbols***. 2.4. Asbestos-containing materials are identified on a work site and reported to designated personnel.
3. Plan and prepare for safe work practices.	3.1. Correct ***personal protective equipment*** and clothing for each area of construction work are identified, worn, correctly fitted, used and stored according to enterprise procedures. 3.2. Selection of ***tools***, ***equipment*** and ***materials***, and organisation of tasks are performed in conjunction with other personnel on site and in accordance with enterprise procedures. 3.3. Required barricades and signage are determined and erected at the appropriate site location. 3.4. Material safety data sheets (MSDS), and job safety analysis (JSA) and safe work method statements relevant to the work to be carried out are identified and applied.
4. Apply safe work practices.	4.1. Tasks are performed in a manner that is safe for operators, other personnel and the general community in accordance with legislative requirements, and enterprise policies and procedures. 4.2. Plant and equipment guards are used in accordance with manufacturer specifications, work site

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ELEMENT	PERFORMANCE CRITERIA
	regulations and Australian standards where applicable.
	4.3. Procedures and relevant authorities for reporting hazards, incidents and injuries are used.
	4.4. ***Prohibited tools and equipment*** in areas with identified asbestos are recognised and not used.
	4.5. Work site safety signs and symbols are identified and followed.
	4.6. Work site area is cleared and maintained to prevent and protect self and others from incidents and accidents and to meet ***environmental requirements***.
5. Follow emergency procedures.	5.1. Designated personnel are identified in the event of an emergency for communication purposes.
	5.2. Safe workplace procedures for dealing with accidents, various ***types of fire*** and other emergencies are followed, including identification or use, if appropriate, of ***fire equipment*** within scope of responsibilities.
	5.3. ***Emergency response and evacuation procedures*** are known, practised and carried out effectively when required.
	5.4. Emergency first aid treatment of minor injuries is carried out correctly and details of any treatment administered are reported accurately to designated personnel as soon as possible.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to accurately recognise OHS hazards, including asbestos and take all opportunities to alleviate safety problems in a variety of construction work sites and environments
- capacity to deal calmly and effectively with any potential safety problems and work closely with other team members and supervisors to ensure safe working conditions are maintained

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REQUIRED SKILLS AND KNOWLEDGE

- communication skills to:
  - determine and report hazards and risks
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - MSDS, JSA and safe work method statements
    - other relevant documentation
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to contribute to reports
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- asbestos management code prevention of exposure
- basic first aid procedures
- common construction industry terminology
- common workplace safety hazards and risks and procedures for reporting these to designated personnel
- construction industry communications equipment and use
- construction industry health and safety signage
- emergency response and evacuation procedures
- JSA and safe work method statements
- MSDS
- OHS hierarchy of control and role of OHS committees and representatives
- relevant legislation, regulations and workplace requirements relating to OHS, including hazard reduction and personal safety, including duty of care responsibilities, workers' compensation and injury management requirements
- safe manual handling techniques
- safe work practices in normal working environment
- safety equipment, policies and requirements for working in confined spaces and at

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REQUIRED SKILLS AND KNOWLEDGE

height, including on rooves

- tools and equipment prohibited for use near identified asbestos-containing materials (ACM)
- types of fires and basic firefighting equipment
- types, possible location and risks of ACM, including serpentine and amphibole groups, and their use in common building materials
- types, purpose and use of construction industry personal protective equipment and clothing
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- correctly locate, interpret and apply relevant information, standards and specifications
- comply with a site safety plan, organisational policies, OHS regulations and state and territory legislation applicable to workplace operations, including quality requirements
- correctly identify ACM and policies and procedures for reporting this to designated personnel
- effectively communicate and work safely with others
- apply general procedures for responding to incidents and reporting hazards and injuries
- select and use firefighting equipment to extinguish a simulated mechanical fire
- evacuate a site through simulated response to an emergency, complying with workplace procedures.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements

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EVIDENCE GUIDE

- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct,

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EVIDENCE GUIDE

indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Hazards include:

- chemical spills
- electrical safety work in confined spaces
- excavations, including trenches
- falling objects
- fires
- gases
- hazardous materials
- high or very low temperatures
- HIV and other infectious diseases
- liquids under pressure
- manual handling
- moving machinery and equipment
- noise, dust and vapours
- overhanging beams
- protrusions
- sharp equipment
- traffic
- ultraviolet (UV) radiation
- unplanned collapse

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RANGE STATEMENT

	• working at heights.
Designated personnel to be contacted in case of an emergency, accident, fire or to report a risk such as identification of ACM are:	• designated safety officers, determined by the enterprise, who have undertaken specific safety response training • managers or other senior personnel • personnel competent and/or licensed in the safe handling of asbestos • supervisors.

Safe work practices:	• include:
	  • day to day observation of OHS policies and procedures
	  • emergency procedures
	  • risk assessment
	  • use of basic firefighting equipment
	• relate to:
	  • access to site amenities, such as drinking water and toilets
	  • general requirements for safe use of plant and equipment
	  • general requirements for use of personal protective equipment and clothing
	  • housekeeping to ensure a clean, tidy and safer work area
	  • no drugs and alcohol at work
	  • preventing bullying and harassment
	  • smoking in designated areas
	  • storage and removal of debris.

Duty of care requirements:	• relate to:
	  • legal responsibility under duty of care to do everything reasonably practicable to protect others from harm
	  • relevant state and territory OHS requirements and include employers and self-employed persons, persons in control of the work site, construction supervisors, designers, manufacturers and suppliers, construction workers, subcontractors and inspectors
	• may relate to:
	  • own responsibilities to comply with safe work practices, including activities that

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RANGE STATEMENT

	require licences, tickets or certificates of competency.

Incidents include:	• accidents resulting in personal injury or damage to property
	• near misses or dangerous occurrences that do not cause injury but may pose an immediate and significant risk to persons or property, and need to be reported so that action can be taken to prevent recurrence, for example:
	  • breathing apparatus malfunctioning to the extent that the user's health is in danger
	  • collapse of the floor, wall or ceiling of a building being used as a workplace
	  • collapse or failure of an excavation more than 1.5 metres deep (including any shoring)
	  • collapse or partial collapse of a building or structure
	  • collapse, overturning or failure of the load bearing of any scaffolding, lift, crane, hoist or mine-winding equipment
	  • damage to or malfunction of any other major plant
	  • electric shock
	  • electrical short circuit, malfunction or explosion
	  • uncontrolled explosion, fire or escape of gas, hazardous substance or steam
	  • any other unintended or uncontrolled incident or event arising from operations carried on at a workplace.

Australian government and state or territory OHS legislative requirements include:	• Australian standards • construction industry OHS standards and guidelines • duty of care • health and safety representatives, committees and supervisors • JSA and safe work method statements • licences, tickets or certificates of competency • National Code of Practice for Induction Training for Construction Work • national safety standards

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RANGE STATEMENT

	• OHS and welfare Acts and regulations • safety codes of practice.
Information includes:	• diagrams or sketches • emergency situation contacts • evacuation plans • instructions issued by authorised organisational or external personnel • labels • manufacturer specifications and instructions • memos • MSDS • organisation work specifications and requirements • plans and specifications • regulatory and legislative requirements, such as Acts, regulations and codes of practice • relevant Australian standards • reports of near misses or accidents • safe work procedures or equivalent documentation • safety meeting minutes • signage • verbal or written and graphical instructions • work bulletins • work schedules.
Hazardous materials include:	• ACM • cleaning chemicals, including those in pressurised containers • glues • insulation materials • solvents • treated timber products.
Measures for controlling risk or minimising hazards in accordance with the hierarchy of control include:	• elimination • substitution • isolation • engineering control • administrative control • personal protective equipment.
Signs and symbols include:	• emergency information signs (exits, equipment, first aid) • fire signs (location of fire alarms and

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RANGE STATEMENT

	firefighting equipment) • hazard identification, facility or location signs • regulatory signs (e.g. prohibition, mandatory and limitation or restriction), such as hazard signs (danger and warning) • safety tags and lockout (danger tags, out of service tags) • site safety, directional, traffic and warning signs and symbols.
Asbestos-containing materials are identified:	• includes recognising common types of ACM that may be found in construction materials and buildings • covers asbestos rope/fabrics, asbestos cement sheeting, asbestos cement piping and lagging on pipes, bituminous waterproof membrane, fire doors, electrical switchboards, millboard, and sheeting under ceramic or vinyl floor tiles in wet areas.
Asbestos-containing materials are ***reported*** to:	• person in control of the workplace as set out in the relevant Asbestos Management Code.
Personal protective equipment is to include:	• aprons • arm guards • caps • dust mask/respirators • ear muffs/plugs • gloves • hard hats • high visibility retro reflective vests • jackets • overalls • safety glasses/goggles • steel capped boots • UV protective clothing and sunscreen.
Tools and equipment include:	• firefighting equipment • first aid kit • ladders and work platforms • personal protective equipment.
Materials include:	• first aid materials suitable for emergency first aid treatment of minor injuries.
Prohibited tools and equipment that cannot be used near identified	• high-speed abrasive power and pneumatic tolls, high pressure water cleaners, compressed

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RANGE STATEMENT

ACM include:	air or abrasive blasting • any vacuum cleaning equipment not specifically designed for safe work with asbestos.
Environmental requirements are to cover workplace quality management and include:	• clean-up protection • stormwater protection • waste management.
Types of fire includes:	• electrical, chemical, gas, mechanical, paper, wood or natural fire.
Fire equipment includes:	• breathing apparatus • fire extinguishers • fire hydrant and hoses • fire reel • fire truck • manual firefighting instruments, such as fire blankets.
Emergency response and evacuation procedures include:	• emergencies, such as fire, toxic and/or flammable vapours emission, vehicle/mobile plant accident, structural collapse, chemical spill and injury to personnel • extinguishing fires, organisational first aid requirements and evacuation.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCPA3001A Prepare subgrade, base and bedding course for segmental paving

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to prepare the subgrade, base and bedding courses in preparation for laying pavers.

It includes identifying soil type, drainage and materials for the base; calculating quantities of base material; compacting base; and screeding to determined levels.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of skills and knowledge to safely and effectively prepare subgrade, base and bedding course for segmental paving while working with others and in teams.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. ***Materials*** quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, ***safely handled*** and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and statutory and regulatory authority requirements and applied. 1.8. Importance of the design and installation of the base, bedding and surface layers in the performance of the paving project are identified.
2. Identify soil type.	2.1. Class of soil is identified using soil class charts. 2.2. Soil is assessed to determine its properties. 2.3. Results of penetration tests are used to determine subgrade requirements.
3. Prepare subgrade.	3.1. Drainage and other features are identified within the area to be paved. 3.2. ***Remedial actions*** are used where required. 3.3. Drainage needs are identified and drains put in place where required. 3.4. Services are identified in work area. 3.5. Termite barriers are identified and not breached, or remedial action is taken if needed to ensure barrier integrity is maintained. 3.6. Damp proof courses are identified and paving is constructed so that it does not compromise them. 3.7. Components are cleaned, stacked and stored for

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ELEMENT	PERFORMANCE CRITERIA
	reuse or bundled for removal.
4. Excavate the site.	4.1. Site is excavated in preparation for paving to remove top soil, weeds and their root systems. 4.2. Factors that determine amount of excavation are identified. 4.3. Bulking factor for different soil types is calculated.
5. Install base course materials.	5.1. Quantity of base course materials is calculated based upon the subgrade type and purpose of the paved area. 5.2. Material is distributed over area, allowing for compaction. 5.3. Area is compacted, taking care not to over-compact base materials. 5.4. Compacting machinery is handled correctly.
6. Install bedding course materials.	6.1. Bedding course material is selected, ensuring that it is suitable for the purpose. 6.2. Need for geotextile materials as drainage or separation layers is determined. 6.3. Quantity of layer course materials is calculated. 6.4. Bedding course is stabilised for paths with slopes of greater than 1:15. 6.5. Transverse concrete supports are installed for driveways with a sloping pavement of greater than 5 metres. 6.6. Material is distributed over the area to be paved within tolerances stipulated by relevant standards. 6.7. If using bedding sand, area is compacted to Australian standards taking care not to over-compact base materials, and allowance is made for compaction. 6.8. Compacting machinery is handled correctly. 6.9. If using concrete, area to be paved is framed and concrete is mixed to manufacturer's directions and spread to required depth.
7. Screed base materials.	7.1. Base materials are screeded to levels as determined, and set out by stringlines or other mechanisms. 7.2. Excess base materials are screeded to a specified area.
8. Clean up.	8.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.

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ELEMENT	PERFORMANCE CRITERIA
	8.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones

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REQUIRED SKILLS AND KNOWLEDGE

- voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- principles of California bearing ratio (CBR)
- properties of bedding course materials
- properties of geotextile materials
- relevant Australian standards
- stabilising bedding sand.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures including quality requirements • safely and effectively operate and use tools, plant and equipment • communicate and work effectively and safely with others.
Context of and specific resources	This competency is to be assessed using standard

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EVIDENCE GUIDE

for assessment

and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles

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EVIDENCE GUIDE

- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

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RANGE STATEMENT

Information includes:	• diagrams or sketches • instructions issued by authorised organisational or external personnel • manufacturer specifications and instructions, where specified • material safety data sheets (MSDS) • memos • regulatory and legislative requirements pertaining to paving and concreting materials • relevant Australian standards • safe work procedures relating to handling concreting materials • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers

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RANGE STATEMENT

	• surrounding structures • traffic control • trip hazards • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• compactors • concrete mixer • levelling devices • rakes • screed • shovels • stringlines • wheelbarrows.
Materials include:	• aggregates • bedding sand • cement • concrete • crushed rock • road base • sand.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.

Safely handled includes:	• correct calculation of quantities
	• manual handling, including:
	  • using pallets
	  • carrying materials using correct lifting techniques
	  • control of waste
	• MSDS
	• protection of materials
	• stacking and storing of materials.

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RANGE STATEMENT

Environmental requirements include:	• clean-up management • dust and noise • dust suppression, which includes keeping dust in the air to a minimum and may include spraying with water • vibration • waste management.
Remedial actions include:	• soil stabilisation • installing a capping layer • making drainage improvements.
Factors determining amount of excavation include:	• compaction measurements • achieving a consistent subgrade • cost factors.
Quantity of layer course materials is based upon:	• purpose of the paved area (pedestrian or vehicle access) • subgrade type • type of paver.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPA3002A Lay segmental pavers

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to lay segmental pavers on prepared subgrade and base.

It includes assessing segmental paver type and quality, setting up stringlines, setting up squared sections for the laying of segmental pavers where required and shifting pavers.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to safely and efficiently lay a range of segmental pavers while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and statutory and regulatory authority requirements and applied.
2. Assess pavers.	2.1. Segmental pavers are assessed for fitness for purpose. 2.2. Pavers are bulk sampled for consistency in size, dimensions, colour and imperfections, such as chips. 2.3. Rejected pavers are assessed for use as cut pavers and put aside.
3. Lay pavers.	3.1. Pavers are moved to area for paving. 3.2. Stringline grid squares are set up to establish the gauge of the paving project and guide levels and lines (where determined). 3.3. Pavers are laid to ***design*** following ***efficient laying practices***. 3.4. Pavers are laid to reduce localised stresses between adjacent pavers. 3.5. Laid pavers are checked for tolerances in allowable variations from an intended work size or position. 3.6. Correct handling procedures are adhered to. 3.7. Pavers are adjusted to ensure integrity of design with allowances for setting materials.

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ELEMENT	PERFORMANCE CRITERIA
	3.8. A header or soldier course is laid where required (which may be at the outset of the paving project).
4. Clean up.	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	4.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a

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REQUIRED SKILLS AND KNOWLEDGE

range of cultural and ethnic backgrounds and with varying physical and mental abilities

- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Require knowledge for this unit is:

- properties of different segmental paving and their 'fit-for-purpose'
- properties of segmental pavers
- relevant Australian standards.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures including quality requirements • safely and effectively operate and use tools, plant and equipment • communicate and work effectively and safely with others.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices

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EVIDENCE GUIDE

- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at

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EVIDENCE GUIDE

the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to handling concreting materials
- relevant Australian standards
- safe work procedures relating to handling concreting materials
- signage

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RANGE STATEMENT

	• verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

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RANGE STATEMENT

Tools and equipment include:	• levelling devices • screed • stringlines • wheelbarrows.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • dust suppression, which includes keeping dust in the air to a minimum and may include spraying with water • vibration • waste management.

Segmental pavers include:	• materials, including:
	  • brick
	  • concrete
	  • coping products
	  • flags (gross plan area >0.08 square metres)
	  • manufactured products
	  • stone
	• types, including:
	  • dentated units that interlock to either:
	  • resist the relative movement of joints parallel to both longitudinal and transverse axes of the joint
	  • resist the relative movement of joints parallel to one axis
	  • units that do not interlock.

Fitness for purpose is determined with reference to the relevant Australian standards for:	• abrasion resistance • breaking load • resistance to salt attack • slip resistance • work size.
Design includes:	• at forty-five degrees orientation • at ninety-degrees orientation • at other orientation • basketweave 2 x 1

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RANGE STATEMENT

	• basketweave 2 x 2
	• concentric
	• crazy pave
	• herringbone
	• may be:
	  • offset running bond
	  • offset stretcher
	  • radial
	  • stack
	  • stack and stretcher
	  • stretcher bond
	  • tracery
	  • winding
	  • zigzag running bond.

Efficient laying practices include:	• considering direction of fall or slope on the job • good access to materials • minimising cutting • working around existing structures.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPA3003A Cut segmental pavers

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to cut pavers.

It includes using cutting equipment, such as brick cutters, concrete saws, guillotines, bolsters and cold chisels.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to safely and efficiently cut segmental pavers as part of the completion of paving work while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and statutory and regulatory authority requirements applied.
2. Pavers are marked and cut.	2.1. ***Segmental pavers*** are selected for cutting. 2.2. Pavers for cutting are measured and marked for required ***types of cuts***. 2.3. ***Cutting saws*** are set up ensuring that they are level, trays are rolling freely and overflow water is discarded appropriately adhering to local regulations. 2.4. Saw blades are examined to determine sharpness and, if water cooled, that water is supplied at the required quantities. 2.5. Protective equipment for eyes, ears and breathing is appropriate, in serviceable condition and used to manufacturer specifications. 2.6. Pavers are cut accurately within industry tolerances.
3. Clean up.	3.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 3.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- characteristics of segmental pavers
- ordinances for noise in residential and other areas

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REQUIRED SKILLS AND KNOWLEDGE

- ordinances for the use and disposal of water.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures including quality requirements • safely and effectively operate and use tools, plant and equipment • communicate and work effectively and safely with others.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices

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EVIDENCE GUIDE

- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at

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EVIDENCE GUIDE

the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to paving and concreting materials
- relevant Australian standards
- safe work procedures relating to handling concreting materials
- signage

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RANGE STATEMENT

	• verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
1.1. ***Planning and preparation*** include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

1.2. ***Safety*** (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

1.3. ***Tools and equipment***	• levelling devices

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RANGE STATEMENT

include:	• screed • stringlines • wheelbarrows.
1.4. ***Quality requirements*** include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
1.5. ***Environmental requirements*** include:	• clean-up management • dust and noise • dust suppression, which includes keeping dust in the air to a minimum and may include spraying with water • vibration • waste management.
1.6. ***Segmental pavers*** include:	• brick • concrete • coping products • flags (gross plan area >0.08 square metres) • manufactured products • stone.
1.7. ***Types of cuts*** include:	• angle cuts • concave cuts • convex cuts • insert cuts (where a series of incisions are made into the paver, then gently tapped out with a cold chisel) • straight cuts • undercuts (to angle a paver, for example when incorporating an angled channel drain).
1.8. ***Cutting saws*** include:	• angle grinders • bolsters • cold chisels • concrete cutting saws • diamond-tipped blade brick cutting saws • guillotines.

Unit Sector(s)

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Unit sector Construction

Functional area

Functional area

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CPCCPA3004A Finish segmental paving

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to set pavers using setting materials that include sand, mortar and pebbles.

Application of the Unit

Application of the unit This unit supports the attainment of skills and knowledge to safely and efficiently finish paving work by setting it, while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Setting materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and statutory and regulatory authority requirements applied.
2. Set segmental pavers.	2.1. Paved area is secured with an edging course (usually a header or soldier course), which may include underpinning the header course with mortar. 2.2. Segmental pavers are set using sand, mortar, pebble or other material. 2.3. Where required, compacting or rolling equipment is used in accordance with manufacturer specifications. 2.4. If using sand for setting, process is repeated until paved area will not take any more filling sand. 2.5. If using mortar for setting, excess mortar is removed and pavers are cleaned of excess mortar. 2.6. Paving project is checked for chipped or cracked pavers and these are replaced. 2.7. If required, sealants or protective coatings are applied following manufacturer specifications.
3. Clean up.	3.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 3.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with

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ELEMENT	PERFORMANCE CRITERIA
	manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

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REQUIRED SKILLS AND KNOWLEDGE

Required knowledge for this unit is:

- effect of salt and chlorine in pools on mortar and other bonding agents around swimming pools
- principles of vertical interlock, rotational interlock and horizontal interlock.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures including quality requirements • safely and effectively operate and use tools, plant and equipment • communicate and work effectively and safely with others.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices

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EVIDENCE GUIDE

- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at

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EVIDENCE GUIDE

the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

1.1. ***Information*** includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to paving and concreting materials
- relevant Australian standards
- safe work procedures relating to handling concreting materials
- signage

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RANGE STATEMENT

	• verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
1.2. ***Planning and preparation*** include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

1.3. ***Safety*** (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

1.4. ***Tools and equipment***	• brooms

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RANGE STATEMENT

include:	• plate compactor • protective sheet or rollers for plate compactor • shovels • trowels.
1.5. ***Quality requirements*** include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
1.6. ***Setting materials*** include:	• joint-filling sand • mortar • pebbles • silica products.
1.7. ***Environmental requirements*** include:	• clean-up management • dust and noise • dust suppression, which includes keeping dust in the air to a minimum and may include spraying with water • stormwater management • vibration • waste management.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPA3005A Maintain and repair segmental paving

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to maintain and repair segmental paving.

It includes the use of extraction and reinstatement tools for repairs made to pavers, pavement surfaces, drainage points and paving joints.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge for safe and efficient repair of segmental paving, while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. ***Setting material*** quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and statutory and regulatory authority requirements and applied.
2. Identify maintenance or repair issues.	2.1. Paved area is assessed for ***problems***. 2.2. Causal factors are identified and remedial action plan is developed.
3. Remedial action is undertaken.	3.1. ***Remedial action*** is undertaken. 3.2. Pavement is opened and segmental pavement is reinstated, including matching newer pavers with the existing pavers. 3.3. Subgrade is repaired. 3.4. Joints are maintained, including refilling joints with sand or mortar.
4. Paved area is cleaned.	4.1. Routine cleaning is undertaken, taking care to avoid excessive removal of jointing sands. 4.2. Stains are identified and appropriate ***cleaning methods*** are used following OHS requirements and manufacturers specifications. 4.3. Causes of efflorescence are recognised and means to minimise condition are used.
5. Clean up.	5.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation,

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ELEMENT	PERFORMANCE CRITERIA
	regulations, codes of practice and job specification. 5.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:

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REQUIRED SKILLS AND KNOWLEDGE

- use a range of mobile technology, such as two-way radio and mobile phones
- voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- characteristics and treatment of:
  - efflorescence
  - white scum
  - dirt and grime
  - vanadium stains
  - fresh mortar stains
  - hard mortar stains
  - fungi, lichens, moulds and mosses
  - oil, bitumen and tar
  - food stains
  - tyre marks
  - chewing gum
- correct cleaning procedures, incorporating OHS
- types and applications of chemical cleaners.

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EVIDENCE GUIDE

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Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures including quality requirements • safely and effectively operate and use tools, plant and equipment • communicate and work effectively and safely with others.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices

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EVIDENCE GUIDE

- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
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EVIDENCE GUIDE

the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to paving and concreting materials
- relevant Australian standards
- safe work procedures relating to handling concreting materials
- signage

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RANGE STATEMENT

	• verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

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RANGE STATEMENT

Tools and equipment include:	• brooms • plate compactor • protective sheet or rollers for plate compactor • shovels • trowels.
Setting materials include:	• joint-filling sand • mortar • pebbles • silica products.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • dust suppression, which includes keeping dust in the air to a minimum and may include spraying with water • stormwater management • vibration • waste management.
Problems include:	• chipping • joint grouting • staining • surface movement - horizontal or vertical cracking • wearing.
Remedial actions include:	• regrouting paving • relevelling • replacement of broken or chipped segmental pavers.
Cleaning methods include:	• chemical, including acid washes • dry brushing • pressure water cleaning • scraping • wet scrubbing.

Unit Sector(s)

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Unit sector Construction

Functional area

Functional area

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CPCCPB3001A Fix standard plasterboard wall sheets

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to fix standard plasterboard wall sheets to comply with manufacturer and job specifications.

Application of the Unit

Application of the unit This unit supports the attainment of skills and knowledge to safely and efficiently fix plasterboard wall sheets while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Identify work requirements.	2.1. Framing and substrate are checked to confirm suitability for the fixing work and problems are reported. 2.2. Instructions to assemble required materials are identified and followed. 2.3. ***Work sequences***, ***fixing processes*** and back blocking wall sheets are identified from manufacturer recommendations. 2.4. Wall dimensions are matched to sheet size. 2.5. Cuts are planned to locate joints where the effect of glancing light highlighting the jointing is minimised.
3. Plan and cut wallboard.	3.1. Sheets are cut to minimise waste and joints in problem areas while maximising board use. 3.2. Cutting process and provision for penetrations follow manufacturer and employer-approved procedures, minimising dust exposure to others and using appropriate personal protective equipment. 3.3. Cut sheets are relocated to fixing site and stored to minimise damage and facilitate planned fixing activities.
4. Fix standard	4.1. Sheets are hung using manufacturer's recommended

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ELEMENT	PERFORMANCE CRITERIA
wallboard sheets.	methods and fasteners and employer-approved manual handling techniques. 4.2. Work sequences and fixing processes are undertaken.
5. Check and complete work.	5.1. Completed work is checked to ensure stop-up activities will be easily completed, appropriate fastening systems have been used and work will retain structural integrity.
6. Clean up.	6.1. Work area is cleared and waste board, adhesives, waste fasteners and other materials are disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 6.2. Hazardous material is identified for separate handling. 6.3. Non-toxic materials are removed using correct procedures. 6.4. Dust suppression procedures are used to minimise health risk to work personnel and others. 6.5. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and

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REQUIRED SKILLS AND KNOWLEDGE

  - confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- safely use equipment, and shift and handle products and materials
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- general construction terminology
- hazardous materials
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- plasterboard adhesives and fixings
- plasterboard fixing techniques
- plasterboard materials
- processes for the calculation of material requirements
- quality requirements
- tools and equipment types, characteristics, uses and limitations
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others to identify faults in substrate/frame, plasterboard sheets, fasteners, adhesives and personal tools and equipment
- explain the reasons for:
  - lifting wall sheets off the floor and clear of windows and door openings
  - butt joins between studs and backblocking the join
  - position joins over windows and doors away from the corner of the opening
  - drilling or sawing openings for power points and light switches
  - marking wires without brackets as directed by the builder
  - using temporary surface fixing of wallboard
  - using paper tape
- execute work within agreed timeframes and

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EVIDENCE GUIDE

standards
- interpret delivery documentation and work orders
- locate relevant materials
- apply knowledge of industry products and specifications to:
  - match manufacturers' components and materials
  - identify warranty compliance issues
  - identify suitable adhesives and fasteners for fixing plasterboard
  - identify common faults and problems that require reporting
  - follow work instructions, operating procedures and inspection practices to:
    - prevent damage to goods, equipment or products
    - select and use appropriate personal protective equipment
    - work effectively alone or with others and minimise the risk of injury
    - modify work activities to cater for variations in work site procedures, personnel, contexts and environment
    - maintain workplace records in relation to materials use
  - use safe handling requirements, based on information provided for equipment, products and materials.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- workplace location or simulated workplace
- materials relevant to fixing plasterboard activities building framework, materials, tools and equipment activities appropriate to fixing

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EVIDENCE GUIDE

plasterboard

- realistic activities covering the mandatory task requirements specifications and work instructions.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination

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EVIDENCE GUIDE

	of direct, indirect and supplementary evidence. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed. Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.
Guidance information for assessment	This unit could be assessed on its own or in combination with other units relevant to the job function, for example: • CPCCCM2010A Work safely at heights. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support. Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:	• diagrams or sketches • instructions issued by authorised organisational or external personnel • manufacturer specifications and instructions, where specified

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RANGE STATEMENT

	• MSDS • memos • regulatory and legislative requirements pertaining to fixing plasterboard • relevant Australian standards • safe work procedures relating to fixing plasterboard • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• work site inspection • equipment defect identification • assessment of conditions and hazards • determination of work requirements and safety plans and policies.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • traffic control
	  • restricted access barriers
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

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RANGE STATEMENT

Tools and equipment include:	• broad knives • brooms • electric screw guns • hand and power drills • hand saws • keyhole saws • measuring tapes and rules • paintbrushes • plasterboard hammers • plasterer's trowels • scaffold planks • T squares • taping knives • trestles.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials include:	• beads • cement render • fibre cement sheets • finishing materials • plaster compounds • plasterboard • plasterglass sheets • water resistant plasterboard.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Work sequences and fixing processes include:	• facilitate finishing techniques appropriate to system • maximise board use • minimise finishing problems • minimise joints • minimise waste.

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Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPB3002A Fix standard plasterboard ceiling sheets

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to fix standard plasterboard ceiling sheets to comply with manufacturer and job specifications.

Application of the Unit

Application of the unit This unit supports the attainment of skills and knowledge to safely and efficiently fix plasterboard ceiling sheets while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Identify work requirements.	2.1. Framing is checked to ensure straightness of cornice line and problems reported. 2.2. Instructions to ***assemble materials*** are identified and followed. 2.3. ***Processes for fixing*** ceiling sheets are identified from manufacturer recommendations. 2.4. ***Work sequencing*** and safety procedures to lift, place and support the sheets are identified and followed.
3. Plan and cut ceiling sheets.	3.1. Ceiling dimensions are matched to sheet size. 3.2. Cuts are planned to locate joints where the effect of glancing light highlighting jointing is minimised. 3.3. Cutting process follows employer-approved procedures, minimising dust exposure to others and using appropriate personal protective equipment. 3.4. Cut sheets are relocated to fixing site and stored to minimise damage and facilitate planned fixing location.
4. Fix standard ceiling sheets.	4.1. Sheets are fixed using manufacturer's recommended methods and fastening systems, including backblocking and employer-approved manual

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ELEMENT	PERFORMANCE CRITERIA
	handling techniques.
	4.2. Work sequences and fixing processes are undertaken.
5. Check and complete work.	5.1. Completed work is checked to ensure stop-up activities will be easily completed and appropriate fastening systems have been used.
6. Clean up.	6.1. Work area is cleared and waste board, adhesives waste fasteners and other materials are disposed of, reused or recycled in accordance with legislation, regulations and codes of practice and job specification.
	6.2. Hazardous material is identified for separate handling.
	6.3. Non-toxic materials are removed using correct procedures.
	6.4. Dust suppression procedures are used to minimise health risk to work personnel and others.
	6.5. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand

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REQUIRED SKILLS AND KNOWLEDGE

- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication, such as hand signals
- written skills to record results of checks and tests and relevant work completion procedures

- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change, and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- general construction terminology
- hazardous materials
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- plasterboard adhesives and fixings
- plasterboard fixing techniques
- plasterboard materials
- processes for the calculation of material requirements
- quality requirements
- tools and equipment types, characteristics, uses and limitations
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- select and use appropriate plasterboard ceiling materials and work methods
- explain the reasons for:
  - screw fixing of ceiling sheets
  - using particular types of screws for timber or metal frame and furring channel
  - using trimmers and noggins
  - butt joins centred between battens and staggered
  - drilling or sawing openings as required
  - using paper tape for all joins
  - backblocking and stitching of butt joins
- follow manufacturers' instructions for installation without constant supervision
- identify faults in plasterboard fixing, joining and finishing
- execute work within agreed timeframes and standards
- interpret delivery documentation and work orders
- locate relevant materials
- apply knowledge of industry products and specifications to identify:
  - manufacturers' components and materials
  - warranty compliance issues
  - suitable materials for a wide range of applications

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EVIDENCE GUIDE

- common faults and problems that require reporting
- follow work instructions, operating procedures and inspection practices to:
  - prevent damage to goods, equipment or products
  - select and use appropriate personal protective equipment
  - work effectively alone or with others and minimise the risk of injury
  - modify work activities to cater for variations in work site procedures, personnel, contexts and environment
  - maintain workplace records in relation to materials, plant and equipment use
  - use safe handling requirements, based on information provided for equipment, products and materials.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- building framework
- materials
- tools and equipment.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of

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EVIDENCE GUIDE

the Construction, Plumbing and Services Training Package

- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function, for example:

- CPCCCM2010A Work safely at heights.

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EVIDENCE GUIDE

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to fixing plasterboard
- relevant Australian standards
- safe work procedures relating to fixing plasterboard
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Planning and preparation include:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- equipment defect identification

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RANGE STATEMENT

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• work site inspection.
	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • traffic control
	  • restricted access barriers
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment include:	• broad knives • brooms • electric screw guns • hand and power drills • hand saws • keyhole saws • measuring tapes and rules • paintbrushes • plasterboard hammers • plasterer's trowels • scaffold planks • T squares • taping knives • trestles.
Quality requirements include	• Australian standards

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RANGE STATEMENT

relevant regulations, including:	• internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials include:	• beads • cement render • fibre cement sheets • finishing materials • plaster compounds • plasterboard • plasterglass sheets • water resistant plasterboard.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Assemble materials includes:	• adhesives • board • equipment • fasteners.
Processes for fixing and ***work sequencing*** include:	• facilitate finishing techniques appropriate to system • maximise board use • minimise finishing problems • minimise joints • minimise waste.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPB3003A Fix battens

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to fix battens to ceiling joists or roof trusses when preparing to fix ceiling system sheets.

Application of the Unit

Application of the unit This unit supports the attainment of skills and knowledge to safely and efficiently fix battens prior to fixing plasterboard sheeting while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Identify work requirements.	2.1. Requirements for fixing battens to support structures are identified and selected. 2.2. Fasteners appropriate to fixing battens are identified and selected. 2.3. Joists and trusses are checked to confirm suitability for fixing battens, and any requirement to correct unevenness in joists and trusses is noted.
3. Cut and fix battens.	3.1. Packing materials are used to correct uneven joists where required. 3.2. Battens are measured and cut using approved work methods and required personal protective equipment. 3.3. Battens are fixed using selected fasteners at specified centres according to manufacturer recommendations. 3.4. Completed work is checked for correct alignment and fixing.
4. Clean up.	4.1. Work area is cleared and batten materials and fasteners are disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 4.2. Hazardous material is identified for separate

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ELEMENT	PERFORMANCE CRITERIA
	handling. 4.3. Non-toxic materials are removed using correct procedures. 4.4. Dust suppression procedures are used to minimise health risk to work personnel and others. 4.5. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a

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REQUIRED SKILLS AND KNOWLEDGE

range of cultural and ethnic backgrounds and with varying physical and mental abilities

- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- adjust work activity to maintain quality standards
- application of product and process knowledge to identify problems and predict consequences
- identifying faults in operation of equipment or in materials quality
- identifying from workplace information and labels the type and purpose of materials and potential for health and safety risks
- identifying the purpose of tags and logs of use for equipment
- implications on work quality requirements for instruction to be followed
- manufacturer and supplier instructions for plant and equipment
- manufacturers' system installation procedures and nominated specifications for the work process
- names and functions of equipment, components and materials
- requirements for a systematic approach to planning own work
- safely use equipment, shift and handle products and materials.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- select and use appropriate batten materials and work methods
- operate from basic instructions without constant supervision
- identify faults in substrate/frame and rectify or report as required by contract
- execute work within agreed timeframes and standards
- interpret delivery documentation and work orders, and locate relevant materials
- apply knowledge of industry products to identify:
  - manufacturers' components and materials
  - Australian standards, Building Code of Australia (BCA) and manufacturer or contractor warranty compliance issues
  - suitable materials for a wide range of applications
  - common faults and problems that require reporting
- follow work instructions, select and use appropriate tools, materials, fasteners and equipment for safe work at heights to:
  - prevent damage to goods, equipment or products
  - select and use appropriate personal protective equipment
  - work effectively alone or with others and

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EVIDENCE GUIDE

	minimise the risk of injury • modify work activities to cater for variations in work site procedures, personnel, contexts and environment • maintain workplace records in relation to materials, plant and equipment use • use safe work behaviours and handling requirements for equipment, products and materials.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • building framework • batten materials • tools and equipment. Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles

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EVIDENCE GUIDE

- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function, for example:

- CPCCCM2010A Work safely at heights.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

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Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to fixing of battens
- relevant Australian standards
- safe work procedures relating to fixing of battens
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Planning and preparation include:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- equipment defect identification
- work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- hazard control
- hazardous materials and substances
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and

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RANGE STATEMENT

	treatments associated with: • concealed services (water, power and gas) • lighting • traffic control • restricted access barriers • trip hazards • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• broad knives • brooms • electric screw guns • equipment to work at heights • hand and power drills • hand saws • keyhole saws • measuring tapes and rules • paintbrushes • plasterboard hammers • plasterer's trowels • scaffold planks • T squares • taping knives • trestles.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials include:	• beads • cement render • fibre cement sheets • finishing materials • plaster compounds • plasterboard

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RANGE STATEMENT

	• plasterglass sheets • water resistant plasterboard.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPB3004A Fix wet area sheets

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to fix wet area sheets to comply with manufacturer and job specifications.

Application of the Unit

Application of the unit This unit supports the attainment of skills and knowledge to safely and efficiently fix wet area sheeting while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Identify work requirements.	2.1. Framing/substrate is checked to confirm suitability for the fixing work. 2.2. Processes for fixing sheets are identified from manufacturer recommendations. 2.3. Sheets are measured to minimise waste and joins in problem areas while maximising board use. 2.4. Where required, baths, shower bases and basins are covered with scrap sheets.
3. Plan and cut wet area sheets.	3.1. Wall dimensions are matched to sheet size. 3.2. Cuts are planned to locate joints to minimise effect of jointing processes on function and visual appearance. 3.3. Cutting process follows employer-approved procedures, minimising dust exposure to others and using appropriate personal protective equipment. 3.4. Penetrations are made following manufacturer approved tools, personal protective equipment and procedures. 3.5. Cut sheets are relocated to fixing site and stored to minimise damage and facilitate planned fixing activities.

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ELEMENT	PERFORMANCE CRITERIA
4. Fix wet area sheets.	4.1. Sheets are hung. 4.2. ***Work and fixing processes*** are sequenced and undertaken. 4.3. Completed work is checked.
5. Clean up.	5.1. Work area is cleared and board materials and fasteners are disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 5.2. Hazardous material is identified for separate handling. 5.3. Non-toxic materials are removed using correct procedures. 5.4. Dust suppression procedures are used to minimise health risk to work personnel and others. 5.5. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals

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REQUIRED SKILLS AND KNOWLEDGE

- written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- application of product and process knowledge to identify problems and predict consequences
- identifying faults in operation of equipment or materials quality
- identifying from workplace information and labels the type and purpose of materials and potential for health and safety risks
- implications on work quality requirements for instruction to be followed
- manufacturers' product installation procedures and nominated specifications for the work process
- names and functions of equipment, components and materials
- requirements for a systematic approach to planning own work
- safely use equipment, shift and handle products and materials.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- select and use appropriate wet area materials and work methods
- operate from basic instruction without constant supervision
- explain the reasons for:
  - lifting sheets off the floor and clear of windows, door openings and plumbing fixtures
  - providing flashing for wet areas
  - only using mechanical fastening systems in tiled areas
  - using full sheets over windows and doors
  - drilling or sawing openings for plumbing, power points and light switches
  - marking wires without brackets clearly
  - using personal protective equipment
  - identifying faults in wet area fixing, joining and finishing
  - executing work within agreed timeframes and standards
  - interpreting delivery documentation and work orders
  - locating relevant materials
- apply knowledge of industry products to identify:
  - manufacturers' components and materials
  - warranty compliance issues

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EVIDENCE GUIDE

- suitable materials for a wide range of applications
- common faults and problems that require reporting
- follow work instructions, operating procedures and inspection practices to:
  - prevent damage to goods, equipment or products
  - meet required work output and quality
  - select and use appropriate personal protective equipment
  - work effectively alone or with others and minimise the risk of injury
  - modify work activities to cater for variations in work site procedures, personnel, contexts and environment
  - maintain workplace records in relation to materials, plant and equipment use
  - use safe handling requirements, based on information provided for equipment, products and materials.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- building framework
- materials
- tools and equipment.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the

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EVIDENCE GUIDE

provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for

This unit could be assessed on its own or in

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EVIDENCE GUIDE

assessment	combination with other units relevant to the job function, for example: • CPCCCM2010A Work safely at heights. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support. Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to fixing wet area sheets
- relevant Australian standards
- safe work procedures relating to fixing wet area sheets
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

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RANGE STATEMENT

Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • traffic control
	  • restricted access barriers
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment include:	• broad knives • brooms • electric screw guns • hand and power drills • hand saws • keyhole saws • measuring tapes and rules • paintbrushes • plasterboard hammers • plasterer's trowels • scaffold planks

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RANGE STATEMENT

	• T squares • taping knives • trestles.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials include:	• beads • cement render • fibre cement sheets • finishing materials • plaster compounds • plasterboard • plasterglass sheets • water resistant plasterboard.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Sheets are hung consistent with:	• employer-approved manual handling techniques • manufacturer's recommended methods and fasteners.
Work and fixing processes include:	• facilitate finishing techniques appropriate to system • maximise board use • minimise finishing problems • minimise joints • minimise waste.
Completed work ensures that:	• appropriate fastening systems have been used • stop-up activities will be easily completed • work will retain structural integrity.

Unit Sector(s)

Unit sector Construction

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Functional area

Functional area

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CPCCPB3005A Fix ceiling sheets to external protected areas

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to fix ceiling sheets to external protected areas to comply with manufacturer and job specifications.

Application of the Unit

Application of the unit This unit supports the attainment of skills and knowledge to safely and efficiently fix external sheeting while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified. obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Plan and cut ceiling sheets.	2.1. Framing is checked to confirm suitability for fixing the ceiling sheets. 2.2. ***Work sequences and fixing processes*** are identified from manufacturer recommendations. 2.3. Sheets are measured to minimise waste and joins in problem areas while maximising board use. 2.4. Ceiling dimensions are matched to sheet size. 2.5. Cuts are planned to locate joints to minimise effect of jointing processes on function and visual appearance. 2.6. Cutting process follows employer-approved procedures for minimising dust exposure to others and using appropriate personal protective equipment. 2.7. Cut sheets are relocated to fixing site and stored to minimise damage and facilitate planned fixing activities.
3. Fix standard ceiling sheets.	3.1. Sheets are fixed. 3.2. Work and fixing processes are sequenced and undertaken. 3.3. Completed work is checked.

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ELEMENT	PERFORMANCE CRITERIA
4. Clean up.	4.1. Work area is cleared and board materials and fasteners are disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 4.2. Hazardous material is identified for separate handling. 4.3. Non-toxic materials are removed using correct procedures. 4.4. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work

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REQUIRED SKILLS AND KNOWLEDGE

- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- adjust work activity to maintain quality standards
- application of product and process knowledge to identify problems and predict consequences
- identifying faults in operation of equipment or materials quality
- identifying from workplace information and labels the type and purpose of materials and potential for health and safety risks
- identifying purpose of tags and logs of use for equipment
- implications on work quality requirements for instruction to be followed
- manufacturer and supplier instructions for plant and equipment
- manufacturers' product installation procedures and nominated specifications for the work process
- names and functions of equipment, components and materials
- requirements for a systematic approach to planning own work
- safely use equipment, shift and handle products and materials.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- select and use appropriate plasterboard ceiling materials and work methods
- operate from basic instruction without constant supervision
- identify faults in plasterboard fixing, joining and finishing
- execute work within agreed timeframes and standards
- interpret delivery documentation and work orders
- locate relevant materials
- apply knowledge of industry products to identify:
  - manufacturers' components and materials
  - warranty compliance issues
  - suitable materials for a wide range of applications
  - common faults and problems that require reporting
- follow work instructions, operating procedures and inspection practices to:
  - prevent damage to goods, equipment or products
  - meet required work output and quality
  - select and use appropriate personal protective equipment
  - work effectively alone or with others and

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EVIDENCE GUIDE

	minimise the risk of injury • modify work activities to cater for variations in work site procedures, personnel, contexts and environment • maintain workplace records in relation to materials, plant and equipment use • use safe handling requirements, based on information provided for equipment, products and materials.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • building framework • materials • tools and equipment. Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles

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EVIDENCE GUIDE

- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function, for example:

- CPCCCM2010A Work safely at heights.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

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Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to fixing ceiling sheets
- relevant Australian standards
- safe work procedures relating to fixing ceiling sheets
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Planning and preparation include:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- equipment defect identification
- work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- hazard control
- hazardous materials and substances
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and

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RANGE STATEMENT

	treatments associated with: • concealed services (water, power and gas) • lighting • traffic control • restricted access barriers • trip hazards • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• broad knives • brooms • electric screw guns • hand and power drills • hand saws • keyhole saws • measuring tapes and rules • paintbrushes • plasterboard hammers • plasterer's trowels • scaffold planks • T squares • taping knives • trestles.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials include:	• beads • cement render • fibre cement sheets • finishing materials • plaster compounds • plasterboard • plasterglass sheets

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RANGE STATEMENT

	• water resistant plasterboard.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Work sequences and fixing processes include:	• facilitate finishing techniques appropriate to system • maximise board use • minimise finishing problems • minimise joints • minimise waste.
Sheets are fixed consistent with:	• manufacturer's recommended methods and fasteners • employer-approved manual handling techniques.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPB3006A Fix fibre cement board

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to fix fibre cement board to comply with manufacturer and job specifications.

Application of the Unit

Application of the unit This unit supports the attainment of skills and knowledge to safely and efficiently fix fibre cement board while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified. obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Plan and cut board.	2.1. Framing is checked to confirm suitability for fixing the ceiling sheets. 2.2. Processes for fixing board are identified from manufacturer recommendations. 2.3. Sheets are measured to minimise waste and joins in problem areas, while maximising board use. 2.4. Wall dimensions are matched to sheet size. 2.5. Cuts are planned to locate joints to minimise effect of jointing processes on function and visual appearance. 2.6. Cutting process follows employer-approved procedures, minimising dust exposure to others and using appropriate personal protective equipment. 2.7. Cut sheets are relocated to fixing site and stored to minimise damage and facilitate planned fixing activities.
3. Fix fibre cement board.	3.1. Sheets are hung. 3.2. ***Work and fixing processes*** are sequenced and undertaken. 3.3. Completed work is checked.

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ELEMENT	PERFORMANCE CRITERIA
4. Clean up.	4.1. Work area is cleared and board materials and fasteners are disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 4.2. Hazardous material is identified for separate handling. 4.3. Non-toxic materials are removed using correct procedures. 4.4. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work

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REQUIRED SKILLS AND KNOWLEDGE

- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- adjust work activity to maintain quality standards
- application of product and process knowledge to identify problems and predict consequences
- identifying faults in operation of equipment or materials quality
- identifying from workplace information and labels the type and purpose of materials and potential for health and safety risks
- identifying the purpose of tags and logs of use for equipment
- implications on work quality requirements for instruction to be followed
- manufacturer and supplier instructions for plant and equipment
- manufacturers' product installation procedures and nominated specifications for the work process
- names and functions of equipment, components and materials
- requirements for a systematic approach to planning own work
- safely use equipment, shift and handle products and materials.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- select and use appropriate fibre cement materials and work methods
- operate from basic instruction without constant supervision
- identify faults in materials and fixing methods
- execute work within agreed timeframes and standards
- interpret delivery documentation and work orders
- locate relevant materials
- apply knowledge of industry products to identify:
  - manufacturers' components and materials
  - warranty compliance issues
  - suitable materials for a wide range of applications
  - common faults and problems that require reporting
- follow work instructions, operating procedures and inspection practices to:
  - prevent damage to goods, equipment or products
  - meet required work output and quality
  - select and use appropriate personal protective equipment
  - work effectively alone or with others and minimise the risk of injury

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EVIDENCE GUIDE

- modify work activities to cater for variations in work site procedures, personnel, contexts and environment
- maintain workplace records in relation to materials, plant and equipment use
- use safe handling requirements, based on information provided for equipment, products and materials.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- building framework
- materials
- tools and equipment.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and

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EVIDENCE GUIDE

environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function, for example:

- CPCCCM2010A Work safely at heights.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

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Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to fixing cement board
- relevant Australian standards
- safe work procedures relating to fixing cement board
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Planning and preparation include:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- equipment defect identification
- work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- hazard control
- hazardous materials and substances
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:

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RANGE STATEMENT

	• concealed services (water, power and gas) • lighting • traffic control • restricted access barriers • trip hazards • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment:	• broad knives • brooms • electric screw guns • hand and power drills • hand saws • keyhole saws • measuring tapes and rules • paintbrushes • plasterboard hammers • plasterer's trowels • scaffold planks • T squares • taping knives • trestles.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials include:	• beads • cement render • fibre cement sheets • finishing materials • plaster compounds • plasterboard • plasterglass sheets • water resistant plasterboard.

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RANGE STATEMENT

Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Sheets are hung consistent with:	• employer-approved manual handling techniques • manufacturer's recommended methods and fasteners.
Work and fixing processes include:	• facilitate finishing techniques appropriate to system • maximise board use • minimise finishing problems • minimise joints • minimise waste.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPB3007A Apply levels of finish standards to planning and inspection of own work

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to identify the level of finish standards and their application to the planning and inspection of own work.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to apply quality finish standards for plasterboard work.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Identify levels of finish.	2.1. Level of finish documentation is accessed. 2.2. Features of each level of finish are identified. 2.3. Differences between levels of finish are identified from photographs and personal observation.
3. Establish level of finish requirements.	3.1. Workplace documents, specifications, contract and/or supervisors are used to establish customer levels of finish requirements. 3.2. Recommended work practices to produce required level of finish required by the customer are identified. 3.3. Required modifications to materials or work processes to meet required level of finish are identified. 3.4. Required modifications to materials or work methods are communicated to appropriate personnel.
4. Inspect completed work for level of finish.	4.1. Distinguishing features of levels of finish are identified in the completed work. 4.2. Effects of framing tolerances, windows, light fittings and location of joins on finish of plasterboard are explained.

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ELEMENT	PERFORMANCE CRITERIA
	4.3. Identified features are compared to level of finish descriptions. 4.4. Build-up on joins is inspected for influence on level of finish. 4.5. Level of finish classification is allocated to inspected work.
5. Provide advice for surface finishing.	5.1. Requirements for painting are identified. 5.2. Explanations are provided to customer and painter.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions and diagrams in manual for equipment and installation of plasterboard
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems

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REQUIRED SKILLS AND KNOWLEDGE

- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- adjusting work activity to maintain quality standards
- application of product and process knowledge to predict consequences and identify improvements
- identification of architectural styles, structures and fittings that will influence glancing light
- identifying and applying appropriate safety precautions to safely use equipment, and shift and handle products and materials
- identifying and reading manufacturers' product installation procedures and nominated specifications for the work process to produce level 4 and 5 finishes
- identifying faults in building structure, materials quality and finished joints and edges
- job safety analysis (JSA) and safe work method statements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- explain key differences and typical application of level 3, 4 and 5 finishes
- select and use appropriate level of finish standard
- plan and execute work within agreed timeframe and to a high standard under general supervision
- apply a broad knowledge of industry products to identify:
  - manufacturers' components and materials
  - warranty compliance issues
  - suitable materials for a wide range of applications
- identify problems to level of finish and suggest appropriate alternative rectifications
- interpret work order and locate and apply relevant information from building plans and delivery documents
- follow work instructions, operating procedures and inspection practices to:
  - prevent damage to goods, equipment or products
  - meet required work output and product quality
  - select and use appropriate personal protective equipment
  - minimise the risk of injury to self or others

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- work effectively with other workers on and off site
- modify work activities to cater for variations in work site procedures, personnel, contexts and environment
- maintain workplace records in relation to materials, plant and equipment use
- follow safe handling requirements of equipment, products and materials.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- completed plasterwork and planned work
- level of finish standards.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and

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environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function, for example:

- CPCCCM2010A Work safely at heights.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

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Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to plasterboard
- relevant Australian standards
- safe work procedures relating to plasterboard
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Planning and preparation include:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- equipment defect identification
- work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- hazard control
- hazardous materials and substances
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - concealed services (water, power and gas)

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RANGE STATEMENT

	• lighting • traffic control • restricted access barriers • trip hazards • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• broad knives • brooms • electric screw guns • hand and power drills • hand saws • keyhole saws • measuring tapes and rules • paintbrushes • plasterboard hammers • plasterer's trowels • scaffold planks • T squares • taping knives • trestles.
Quality requirements include relevant regulations, including:	• Australian standards, including AS/NZS2589.1:1997 • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials include:	• beads • cement render • fibre cement sheets • finishing materials • plaster compounds • plasterboard • plasterglass sheets • water resistant plasterboard.

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RANGE STATEMENT

Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPB3008A Mix plastering compounds

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to mix plastering compounds using hand or mechanical mixing techniques.

Application of the Unit

Application of the unit This unit supports the attainment of skills and knowledge to safely and efficiently mix a variety of commonly using compounds for plastering work while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Select materials, equipment and work area.	2.1. Types of ***finishing compounds*** compatible with system performance are identified and selected to match work requirements and manufacturer specifications. 2.2. Processes and equipment for mixing compounds are identified and selected to match tasks from manufacturer recommendations. 2.3. Suitable work area is selected to minimise dust exposure to self and others and to minimise manual handling risks when shifting, mixing and blending.
3. Mix compound.	3.1. Work sequences and mixing requirements are followed. 3.2. Mixture consistency is adjusted to suit intended use. 3.3. Completed work is checked to ensure work meets manufacturer specifications and requirements for intended use.
4. Clean up.	4.1. Mixing equipment is cleaned using employer-approved work practices, disposing of silica-based material following required environmental controls. 4.2. Site area is cleaned up, with waste materials

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ELEMENT	PERFORMANCE CRITERIA
	collected for recycling or disposal, containers covered to prevent spills and contamination. 4.3. Hazardous material is identified for separate handling. 4.4. Non-toxic materials are removed using correct procedures. 4.5. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations, regulatory and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems

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REQUIRED SKILLS AND KNOWLEDGE

- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- application of product and process knowledge to predict consequences and identify improvements
- identifying and applying appropriate safety precautions to safely use equipment, and shift and handle products and materials
- identifying and reading manufacturers' product installation procedures and nominated specifications for the work process
- identifying by name and function equipment, components and materials
- identifying potential for health and safety risks from workplace information and labels
- job safety analysis (JSA) and safe work method statements
- requirements for a systematic approach to planning own work.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- select and use appropriate compounds, consistency and mixing methods
- apply a broad knowledge of industry products to identify:
  - manufacturers' components and materials
  - reasons why manufacturers recommend a three coat system for finishing plaster joins
  - finished textures for hand and mechanical finishing of joints
  - impact of glancing light on finished joins
  - suitable materials for a wide range of applications
- follow work instructions, operating procedures and inspection practices to:
  - prevent damage to goods, equipment or products
  - meet required work output and product quality
  - select and use appropriate personal protective equipment
  - minimise the risk of injury to self or others
- work effectively with other workers on and off site
- follow safe handling requirements of equipment, products and materials.

Context of and specific

This competency is to be assessed using standard and authorised work practices, safety requirements

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EVIDENCE GUIDE

resources for assessment	and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • building framework • finishing materials • tools and equipment. Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with

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EVIDENCE GUIDE

a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to mixing plaster compounds
- relevant Australian standards
- safe work procedures relating to mixing plaster compounds

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RANGE STATEMENT

	• signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • traffic control
	  • restricted access barriers
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment include:	• broad knives • brooms • electric screw guns • hand and power drills • hand saws • keyhole saws • measuring tapes and rules

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RANGE STATEMENT

	• paintbrushes • plasterboard hammers • plasterer's trowels • scaffold planks • T squares • taping knives • trestles.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials include:	• beads • cement render • fibre cement sheets • finishing materials • plaster compounds • plasterboard • plasterglass sheets • water resistant plasterboard.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Finishing compounds include:	• join finishing materials • quality checks for compound • sequences and number of coats.
Work sequences and mixing requirements include:	• facilitate finishing techniques appropriate to system • maximise board use • minimise finishing problems • minimise joints • minimise waste.

Unit Sector(s)

Unit sector Construction

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Functional area

Functional area

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CPCCPB3009A Finish plasterboard joins manually

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to finish plasterboard joins to comply with manufacturer instructions, job specifications and Australian standards.

Application of the Unit

Application of the unit This unit supports the attainment of skills and knowledge to safely and efficiently apply quality finish to plasterboard joins manually while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement.
	1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***.
	1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Identify work requirements.	2.1. Customer requirements for joint finishing are identified.
3. Select materials, processes and equipment.	3.1. Specifications and work requirements are compared and any variations identified.
	3.2. Equipment and processes are selected to match tasks.
	3.3. Base coat, cements and tapes compatible with system performance are selected from manufacturer specifications.
4. Finish joins.	4.1. ***Finishing techniques*** appropriate to joint system are identified and followed.
	4.2. Finishing problems are minimised by employing correct work sequencing and following manufacturer recommendations.
	4.3. ***Joins are finished*** to specifications.
	4.4. Completed work is checked to ensure work will meet manufacturer specifications and Australian standards.
5. Clean up.	5.1. Site area is cleaned up with waste materials collected and disposed of, reused or recycled in accordance

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ELEMENT	PERFORMANCE CRITERIA
	with legislation, regulations, codes of practice and job specification. 5.2. Hazardous material is identified for separate handling. 5.3. Non-toxic materials are removed using correct procedures. 5.4. Dust suppression procedures are used to minimise health risk to work personnel and others. 5.5. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work

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REQUIRED SKILLS AND KNOWLEDGE

- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- adjusting work activity to maintain quality standards
- application of product and process knowledge to predict consequences and identify improvements
- identifying and applying appropriate safety precautions to safely use equipment, and shift and handle products and materials
- identifying and reading manufacturers' product installation procedures and nominated specifications for the work process
- identifying by name and function equipment, components and materials
- identifying faults in operation of equipment or materials quality
- identifying from workplace information and labels the type and purpose of materials and potential for health and safety risks
- identifying the purpose of tags and logs of use for equipment
- interpreting manufacturer and supplier instructions for plant and equipment
- job safety analysis (JSA) and safe work method statements
- requirements for a systematic approach to planning own work.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- select and use appropriate finishing materials and work methods
- plan and execute work within agreed timeframe and to a high standard under general supervision
- apply a broad knowledge of industry products to identify:
  - manufacturers' components and materials
  - warranty compliance issues
  - suitable materials for a wide range of applications
- report problems to supervisors and suggest appropriate alternative rectifications
- interpret work order and locate and apply relevant information from building plans and delivery documents
- follow work instructions, operating procedures and inspection practices to:
  - prevent damage to goods, equipment or products
  - meet required work output and product quality
  - select and use appropriate personal protective equipment
  - minimise the risk of injury to self or others
- work effectively with other workers on and off site

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EVIDENCE GUIDE

- modify work activities to cater for variations in work site procedures, personnel, contexts and environment
- maintain workplace records in relation to materials, plant and equipment use
- follow safe handling requirements of equipment, products and materials.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- building framework
- finishing materials
- tools and equipment.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

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EVIDENCE GUIDE

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function, for example:

- CPCCCM2010A Work safely at heights.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

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Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to plasterboard
- relevant Australian standards
- safe work procedures relating to plasterboard
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Planning and preparation include:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- equipment defect identification
- work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- hazard control
- hazardous materials and substances
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - concealed services (water, power and gas)
  - lighting

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RANGE STATEMENT

	• traffic control • restricted access barriers • trip hazards • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• broad knives • brooms • electric screw guns • hand and power drills • hand saws • keyhole saws • measuring tapes and rules • paintbrushes • plasterboard hammers • plasterer's trowels • scaffold planks • T squares • taping knives • trestles.
Quality requirements include relevant regulations, including:	• Australian standards, including AS/NZ2589 • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials include:	• beads • cement render • fibre cement sheets • finishing materials • plaster compounds • plasterboard • plasterglass sheets • water resistant plasterboard.
Environmental requirements include:	• clean-up management • dust and noise • vibration

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RANGE STATEMENT

	• waste management.
Finishing techniques include:	• join finishing materials • processes for finishing system joins • quality checks for joint finishing • work sequence.
Joint finishing specifications include:	• employer-approved manual handling techniques • manufacturer's recommended methods and materials.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPB3010A Manually sand plaster work

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to hand sand joins in plaster walls, ceilings or cornices.

Application of the Unit

Application of the unit This unit supports the attainment of skills and knowledge to safely and efficiently manually sand plasterboard while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Determine work requirements.	2.1. Work area is inspected to determine work requirements. 2.2. Level of finish as specified in the contract or job order is noted and any mismatches between quality of fixing and finishing are recorded and reported or rectified as appropriate. 2.3. Personal protective equipment suitable for the task is selected based on manufacturers' recommended and employer-approved specification.
3. Sand joins.	3.1. Work site access is gained using approved workplace methods based on the risk assessment for the task, site and circumstance. 3.2. Sanding floats and required dust protection or warning signs are set up for use. 3.3. Sanding is completed to required standard of finish.
4. Inspect work and clean up work area.	4.1. Completed sanding work is inspected for compliance with workplace and customer requirements, including contracted level of finish. 4.2. ***Problems*** are identified and reported. 4.3. Sanded area is brushed down.

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ELEMENT	PERFORMANCE CRITERIA
5. Clean up.	5.1. Work area is cleared and materials are disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 5.2. Sanding dust is cleaned up and contained for disposal in accordance with approved workplace procedures, with any hazardous material identified for separate handling. 5.3. Non-toxic materials are removed using correct procedures. 5.4. Dust suppression procedures are used to minimise health risk to work personnel and others. 5.5. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements

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REQUIRED SKILLS AND KNOWLEDGE

- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- application of product and process knowledge to identify problems and predict consequences
- effects of glancing light on plasterboard joins when paint is applied
- factors that influence level of finish
- identifying from workplace information and labels the type and purpose of materials and potential for health and safety risks
- implications on work quality requirements for instruction to be followed
- job safety analysis (JSA) and safe work method statements
- manufacturers' product mixing and application procedures and nominated specifications for the work process
- manufacturer and supplier instructions for plant and equipment
- requirements for a systematic approach to planning own work
- safely use equipment, shift and handle products and materials.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- select and use appropriate sanding materials and work methods
- operate from basic instruction without constant supervision
- identify requirements to achieve specified level of finish
- identify faults in plasterboard fixing, joining and finishing
- execute work within agreed timeframes and standards
- interpret delivery documentation and work orders
- locate relevant materials
- explain warranty, guarantee and liability requirements for plastering work
- apply knowledge of industry requirements to identify:
  - condition and colour of the top coat when set
  - manufacturers' components and materials
  - contract compliance requirements
  - reasons for use of P1 rating (protection against mechanically generated particles) or P2 rating (protection against mechanically and thermally generated particles) mask and protective clothing when sanding topcoats
  - common faults in materials and work and problems that require reporting

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EVIDENCE GUIDE

- follow work instructions, operating procedures and inspection practices to:
  - prevent damage to goods, equipment or products
  - select and use appropriate personal protective equipment
  - work effectively alone or with others and minimise the risk of injury
  - modify work activities to cater for variations in work site procedures, contexts and environment
  - identify and use appropriate behaviour for interactions with other workers, supervisors, clients and members of the public.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- stopped plasterboard walls and ceilings
- sanding materials
- access methods.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or

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EVIDENCE GUIDE

simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application

- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function, for example:

- CPCCCM2010A Work safely at heights.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified

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EVIDENCE GUIDE

equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to sanding plaster work
- relevant Australian standards
- safe work procedures relating to sanding plaster work
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Planning and preparation include:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- grade of paper to be used
- joins to be hand sanded
- method of accessing work site

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RANGE STATEMENT

	• readiness of topcoat for sanding • work site inspection equipment defect identification.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • traffic control
	  • restricted access barriers
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment include:	• broad knives • brooms • electric screw guns • hand and power drills • hand saws • keyhole saws • measuring tapes and rules • paintbrushes • plasterboard hammers • plasterer's trowels • scaffold planks • T squares • taping knives

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RANGE STATEMENT

	• trestles.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials include:	• beads • cement render • fibre cement sheets • finishing materials • plaster compounds • plasterboard • plasterglass sheets • water resistant plasterboard.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Problems with completed work include:	• sand-through areas.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPB3011A Finish category 1 and 2 wet areas

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to finish wet area systems to comply with manufacturer's instructions, job specifications and Australian standards.

Application of the Unit

Application of the unit This unit supports the attainment of skills and knowledge to safely and efficiently finish wet area surfaces while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Select materials, processes and equipment.	2.1. Substrate is inspected to confirm suitability for the installation of wet area system. 2.2. Materials, equipment and processes for sealing wet area system to category 1 are identified and selected from manufacturer's installation advice. 2.3. Materials, equipment and processes to finish wet areas to category 2 are identified and selected from manufacturer's installation advice.
3. Stop and finish joins, penetrations and edges.	3.1. ***Work sequences*** are planned and undertaken to implement manufacturer's requirements for wet finishing and sealing. 3.2. Problems from glancing light are minimised in category 2 classified areas. 3.3. Potential to perform within Australian standard are maximised in category 1 areas. 3.4. ***Stopping material*** is used to match the wet area system. 3.5. Edges of wet area board to be caulked are sealed using appropriate caulking material. 3.6. Board in category 1 areas is sealed to meet manufacturers' instructions and Australian standard

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ELEMENT	PERFORMANCE CRITERIA
	requirements.
	3.7. Completed work is checked so that work will meet manufacturer specifications and Australian standards.
4. Clean up.	4.1. Work area is cleared and board adhesives and fasteners are disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	4.2. Hazardous material is identified for separate handling.
	4.3. Non-toxic materials are removed using correct procedures.
	4.4. Dust suppression procedures are used to minimise health risk to work personnel and others.
	4.5. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences

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REQUIRED SKILLS AND KNOWLEDGE

- use and interpret non-verbal communication, such as hand signals
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- interpret manufacturers' instructions in diagrams, photographs and written form for equipment and installation of plasterboard
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- application of product and process knowledge to predict consequences and identify improvements
- describing how Australian standards vary between categories 1 and 2
- identifying and applying appropriate safety precautions to safely use materials for wet area sealing and finishing
- identifying and reading manufacturers' product installation procedures and specifications for wet area installation
- identifying by name and function equipment, components and materials appropriate for wet areas
- identifying from workplace information and labels the type and purpose of materials and potential for health and safety risks for wet area materials
- identifying category 1 and 2 wet areas on plans
- job safety analysis (JSA) and safe work method statements
- requirements for a systematic approach to planning own work.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- interpret work order and locate and apply relevant information from building plans and delivery documents
- select and use appropriate wet area materials and work methods
- explain reasons for use of sealers in category 2 areas and care in finishing category 1 areas to deal with glancing light in wet areas
- plan and execute work within agreed timeframe and to a high standard under general supervision
- apply a broad knowledge of industry products to identify:
  - available wet area systems
  - implications of mixing and manufacturers' components and materials
  - warranty compliance issues for wet area installation and Australian standard requirements
- identify and report problems to supervisors and suggest appropriate alternative rectifications
- follow work instructions, operating procedures and inspection practices to:
  - prevent damage to goods, equipment or products
  - meet required work output and product quality
  - select and use appropriate personal

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EVIDENCE GUIDE

	protective equipment • minimise the risk of injury to self or others • work effectively with other workers on and off site • modify work activities to cater for variations in work site procedures, personnel, contexts and environment • maintain workplace records in relation to materials, plant and equipment use • follow safe handling requirements of equipment, products and materials.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • building framework • wet area materials • tools and equipment. Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning

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EVIDENCE GUIDE

knowledge required for practical application

- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function, for example:

- CPCCCM2010A Work safely at heights.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

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EVIDENCE GUIDE

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to finishing wet areas
- relevant Australian standards
- safe work procedures relating to finishing wet areas
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Planning and preparation include:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- equipment defect identification
- work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- hazard control

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RANGE STATEMENT

include:	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • traffic control
	  • restricted access barriers
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment include:	• broad knives • brooms • electric screw guns • hand and power drills • hand saws • keyhole saws • measuring tapes and rules • paintbrushes • plasterboard hammers • plasterer's trowels • scaffold planks • T squares • taping knives • trestles.
Quality requirements include relevant regulations, including:	• Australian standard 3740: 2004 • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials for wet areas include:	• penetration seals • sealers

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RANGE STATEMENT

	• finishing compounds.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Work sequences include:	• facilitate finishing techniques appropriate to system • maximise board use • minimise finishing problems • minimise joints • minimise waste.
Stopping material includes:	• paper tape • topcoat, applying the required number of coats and allowing for drying time • wet area acrylic taping cement.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPB3012A Cut and fix paper-faced cornices

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to measure, cut and fix paper-faced cornices.

Application of the Unit

Application of the unit This unit supports the attainment of skills and knowledge to safely and efficiently fix pre-finished cornices while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Plan and measure for cornice work.	2.1. Style of paper-faced cornice to be fitted is determined from work instructions. 2.2. Cornice length for each work area is determined and noted. 2.3. Requirements for safe work at heights are identified and planned for use.
3. Cut cornice lengths.	3.1. Cornice is handled following approved manual handling procedures. 3.2. Noted measurements are transferred to cornice stock, allowing for mitre requirements. 3.3. Cornice is cut using workplace-approved guides and cutting methods, minimising bending and kneeling with use of personal protective equipment where required.
4. Prepare cornice adhesive.	4.1. Manufacturer's instructions are consulted and applied to the preparation of the adhesive. 4.2. Preparation is carried out using clean container, clean water and approved personal protective equipment (PPE). 4.3. Adhesive powder is added to water until powder can

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ELEMENT	PERFORMANCE CRITERIA
	absorb no more water.
	4.4. Consistency of mix is adjusted to suit hand or mechanical application of adhesive.
5. Fix cornice.	5.1. Means for safe access for work at heights is used where required.
	5.2. Methods of holding cornice temporarily in place at the wall or ceiling junction are planned and used following workplace-approved procedures.
	5.3. Appropriate amount of adhesive is applied to cornice.
	5.4. Cornice is fitted following workplace-approved practices for work at heights and manual handling.
6. Finish work.	6.1. Excess cornice adhesive on cornice faces is removed.
	6.2. Joins and junctions are filled and smoothed.
	6.3. If required, temporary fixings and supports are removed and holes are filled.
7. Clean up.	7.1. Work area is cleared and lengths of cornice and adhesives are disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	7.2. Hazardous material is identified for separate handling.
	7.3. Non-toxic materials are removed using correct procedures.
	7.4. Dust suppression procedures are used to minimise health risk to work personnel and others.
	7.5. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

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REQUIRED SKILLS AND KNOWLEDGE

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- adjusting work activity to maintain quality standards
- application of product and process knowledge to predict consequences and identify improvements
- identifying and applying appropriate safety precautions to safely use equipment, and shift and handle products and materials
- identifying and reading manufacturers' product installation procedures and nominated specifications for mixing adhesives, and fixing and cutting cornices
- identifying by name and general application paper-faced and handmade cornices
- identifying faults in materials
- identifying from workplace information and labels the type and purpose of

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REQUIRED SKILLS AND KNOWLEDGE

materials and potential for health and safety risks for cornices and adhesives

- requirements to plan own work using a systematic approach to allow for efficient and safe handling of cornices and safe access to work at heights.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- identify work order or contract and delivery documentation and match to delivered cornice
- select and use appropriate cornice materials and work methods
- plan and execute work within agreed timeframe and to a high standard under general supervision
- identify problems in fitting cornices and suggest appropriate alternative rectifications
- follow work instructions, operating procedures and inspection practices to:
  - prevent damage to goods, equipment or products
  - explain the reasons for use of cornice reinforcing systems
  - meet required work output and product quality
  - select and use appropriate personal protective equipment
  - minimise the risk of injury to self or others
- work effectively with other workers on and off site
- modify work activities to cater for variations in work site procedures, personnel, contexts and environment
- maintain workplace records in relation to materials, plant and equipment use
- follow safe handling requirements of

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EVIDENCE GUIDE

	equipment, products and materials.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • building framework with plasterboard clad walls • cast cornice • materials • tools and equipment. Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over

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EVIDENCE GUIDE

a period of time reflecting the scope of the role and the practical requirements of the workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function, for example:

- CPCCCM2010A Work safely at heights.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

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Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to fitting cornices
- relevant Australian standards
- safe work procedures relating to fitting cornices
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Planning and preparation include:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- equipment defect identification
- work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- hazard control
- hazardous materials and substances
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - concealed services (water, power and gas)
  - lighting

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RANGE STATEMENT

	• traffic control • restricted access barriers • trip hazards • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• broad knives • brooms • electric screw guns • hand and power drills • hand saws • keyhole saws • measuring tapes and rules • paintbrushes • plasterboard hammers • plasterer's trowels • scaffold planks • T squares • taping knives • trestles.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials include:	• beads • cement render • fibre cement sheets • finishing materials • plaster compounds • plasterboard • plasterglass sheets • water resistant plasterboard.
Environmental requirements include:	• clean-up management • dust and noise • vibration

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RANGE STATEMENT

- waste management.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPB3013A Plan travel routes

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to transport self and others, or deliver product, to the work site.

Application of the Unit

Application of the unit This unit supports the attainment of skills and knowledge to efficiently plan routes to travel to a variety of construction jobs.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Environmental requirements are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Identify travel requirement.	2.1. Reason for journey is determined. 2.2. Route planning is varied to suit the type of vehicle and load to be carried. 2.3. Relevant regulations regarding the transport of dangerous goods are identified and compared to the load to be transported.
3. Identify and determine the most appropriate route.	3.1. Street directory and road map symbols are recognised and interpreted. 3.2. Points of departure and destination are identified in a directory index and the information is used to locate places on the appropriate map. 3.3. Directions for a predetermined route are interpreted and the route is traced using a street directory and road map. 3.4. Key intersections and other landmarks along the route are identified for use in following the planned route. 3.5. Time required to complete the trip is estimated based on speed limits, time of day, expected traffic conditions, distance and controlled intersections.
4. Follow planned route.	4.1. Route is memorised or marked out on map. 4.2. Predetermined route is followed. 4.3. Time taken is compared to predicted time and reasons for any discrepancy are identified.

Required Skills and Knowledge

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - recognise and interpret work related signs, including road signs, safety logos and warnings
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- compare counted quantities with delivery notes and orders
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- implications on work quality for instructions to be followed
- names and functions of equipment, components and materials
- safely use equipment, and shift and handle products and materials

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REQUIRED SKILLS AND KNOWLEDGE

- traffic patterns, road rules and conditions that impact on travel route selection and travel times
- use of indexes, grid references and landmarks.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- select and use appropriate travel routes using maps, street directory and verbal instructions
- operate from basic instruction without constant supervision
- interpret delivery documentation and work orders
- locate relevant materials
- follow work instructions to:
  - prevent damage to goods, equipment or products
  - meet required work output and quality
  - work effectively alone or with others and minimise the risk of injury
  - identify and use appropriate behaviour for interaction with other workers, supervisors, clients and members of the public
  - maintain workplace records.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- travel requirement

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EVIDENCE GUIDE

- street directory/map
- work order.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a

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EVIDENCE GUIDE

combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

1.1. ***Information*** includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to transport
- relevant Australian standards
- safe work procedures relating to transport
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

1.2. ***Planning and preparation*** include:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies

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RANGE STATEMENT

	• equipment defect identification • work site inspection.

1.3. ***Safety*** (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • traffic control
	  • restricted access barriers
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPB3014A Install batt insulation products

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to install thermal and acoustic insulation products to comply with manufacturer and job specifications.

Application of the Unit

Application of the unit This unit supports the attainment of skills and knowledge to safely and efficiently install a variety of batt insulation systems while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Identify work requirements.	2.1. Processes for installing insulation material are identified and implemented from manufacturer specifications. 2.2. Appropriate work sequence and safety procedures are identified and implemented. 2.3. Insulation material is measured to minimise waste while maximising insulation use. 2.4. Insulation rating is confirmed.
3. Cut and fix insulation.	3.1. Insulation is cut to fit area using manufacturer-approved procedures. 3.2. Insulation is ***installed*** using methods, handling techniques, work sequences, fixing processes and fasteners. 3.3. Completed work is checked to ensure stop-up activities will be easily completed, appropriate fastening systems have been used and work will retain structural integrity.
4. Clean up.	4.1. Work area is cleaned and materials and fasteners are disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.

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ELEMENT	PERFORMANCE CRITERIA
	4.2. Hazardous material is identified for separate handling. 4.3. Non-toxic materials are removed using correct procedures. 4.4. Dust suppression procedures are used to minimise health risk to work personnel and others. 4.5. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems

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REQUIRED SKILLS AND KNOWLEDGE

- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- adjust work activity to maintain quality standards
- application of product and process knowledge to identify problems and predict consequences
- identifying faults in insulation materials
- identifying from workplace information and labels the type and purpose of materials and potential for health and safety risks
- identifying the purpose of tags and logs of use for equipment
- implications on work quality requirements for instruction to be followed
- manufacturers' product installation procedures and nominated specifications for the work process
- matching requirements for types and the following rating of insulation materials:
  - resistance to heat (R)
  - sound transmission class (STC)
  - field sound transmission class (FSTC)
- requirements for a systematic approach to planning own work
- safely use equipment, shift and handle products and materials and access work at height.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- select and use appropriate insulation materials and work methods to match customer order and manufacturers' specified procedures
- operate from basic instruction without constant supervision
- execute work within agreed timeframes and standards
- interpret delivery documentation and work orders
- locate relevant materials
- apply knowledge of industry products to identify:
  - manufacturers' components and materials
  - relationships of R rating with Building Code of Australian (BCA) requirements and energy ratings of a property
  - manufacturer specifications in relation to the insulation properties of the product available
  - suitable materials for a wide range of applications
  - common faults and problems that require reporting
- follow work instructions, operating procedures and inspection practices to:
  - prevent damage to goods, equipment or products
  - select and use appropriate personal

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EVIDENCE GUIDE

	protective equipment • work effectively alone or with others and minimise the risk of injury • modify work activities to cater for variations in work site procedures, personnel, contexts and environment • maintain workplace records in relation to materials, plant and equipment use • use safe handling requirements, based on information provided for equipment, products and materials.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • ceiling and wall spaces • materials and tools. Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills

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EVIDENCE GUIDE

with workplace tasks and job roles

- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function, for example:

- CPCCCM2010A Work safely at heights.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in

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relation to the competency being assessed.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to installing batt insulation
- relevant Australian standards
- safe work procedures relating to installing batt installation
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Planning and preparation include:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- equipment defect identification
- work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- hazard control
- hazardous materials and substances
- organisational first aid

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RANGE STATEMENT

	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • traffic control
	  • restricted access barriers
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment include:	• broad knives • brooms • hand saws • keyhole saws • measuring tapes and rules • scaffold planks • T squares • taping knives • trestles.
Quality requirements include relevant regulations, including:	• Australian standard 3999 - 1992 • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Insulation ratings include:	• R • STC/FSTC.
Installation includes:	• employer-approved manual handling techniques • manufacturers' recommended methods and

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RANGE STATEMENT

fasteners

- work sequences and fixing processes that minimise waste and maximise material.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPB3015A Install acoustic and thermal environmental protection systems

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to install wall and ceiling systems that satisfy environmental requirements in terms of acoustic ratings and energy efficiency ratings in accordance with sustainable building practices.

It includes planning and preparation for work, installation of insulation to wall cavities and plenum, installation of acoustic systems and completion of post work clean-up activities.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to safely and efficiently install acoustic and thermal environmental protection systems while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Prerequisite units

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Install blanket insulation to walls.	2.1. Stud configuration is identified for ***installation*** processes. 2.2. Safety wire mesh is installed to plans and specifications. 2.3. Insulating blanket is installed in full length runs where practicable or, if joined, joints are made at centre of frame member, according to plans and specifications. 2.4. Adjacent runs of blanket insulation is abutted with closed joints.
3. Install acoustic systems.	3.1. Acoustic materials are selected to manufacturer specifications for the walls and ceiling. 3.2. Sheeting or ceiling tile material is selected for use in buildings requiring acoustic properties in accordance with manufacturers' weighted sound reduction index (RW rating). 3.3. Plaster sheeting and acoustic tile materials are fixed to walls and ceiling in accordance with specifications. 3.4. Sealant is selected and used to manufacturer specifications.

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ELEMENT	PERFORMANCE CRITERIA
4. Clean up.	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 4.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities

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REQUIRED SKILLS AND KNOWLEDGE

- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- acoustic and thermal protection systems materials and terminology
- acoustic systems installation techniques
- basic acoustic theory
- installation tools and equipment types, characteristics, uses and limitations
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- regulation and building codes related to acoustic and thermal protection requirements and systems
- thermal system installation techniques
- thermal theory related to heat loss
- types of acoustic protection systems available for wall and ceiling application and their characteristics, strengths and limitations
- types of thermal protection systems available for wall and ceiling application and their characteristics, strengths and limitations
- workplace and equipment safety requirements.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and

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EVIDENCE GUIDE

	procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively operate and use tools, plant and equipment • communicate and work effectively and safely with others • complete not less than three installation tasks which cover acoustic and thermal protection systems, in accordance with regulatory requirements and related specifications.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • workplace location or simulated workplace • materials relevant to the installation of acoustic and thermal protection systems • hand and power tools and equipment appropriate to the installation of acoustic and thermal protection systems • realistic activities covering the mandatory task requirements • specifications and work instructions. Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

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EVIDENCE GUIDE

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

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EVIDENCE GUIDE

	Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:	• diagrams or sketches • instructions issued by authorised organisational or external personnel • manufacturer specifications and instructions, where specified • MSDS • memos • regulatory and legislative requirements pertaining to installing acoustic and thermal environmental protection systems • relevant Australian standards • safe work procedures relating to installing acoustic and thermal environmental protection systems • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.
Safety (***OHS***) is to be in	• emergency procedures, including

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RANGE STATEMENT

accordance with state and territory legislation and regulations and project safety plan and may include:	extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • cutting tools
	  • lighting
	  • manual handling
	  • traffic control
	  • restricted access barriers
	  • trip hazards
	  • power sources and leads
	  • power tools
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment:	• include:
	  • broad knives
	  • caulking guns
	  • electric screw guns
	  • etting boxes
	  • hammers
	  • manual levelling devices
	  • measuring tapes and rules
	  • nail bags
	  • power drills
	  • power leads
	  • power saws
	  • screwguns

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RANGE STATEMENT

	• spanners • spirit levels • squares • tin snips • trestles • trowels • may include: • C clamps • air compressors and hoses • docking saw and drop saws • laser levelling devices • masonry drills • nail guns • pop riveters • saw stools • system scaffolding and planks.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials include:	• acoustic ceiling products • adhesive • fibrous plaster • insulation blankets • jointing tape • loose fill insulation • metal and aluminium type products • nails • plasterboard • polystyrene sheets • rigid sheet insulation • screws • sealants • staples • steel safety mesh.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.

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RANGE STATEMENT

Installation includes:	• acoustic and energy insulation materials • acoustic ceiling tiles and sheets • fibre cement sheeting • fixing of plasterboard • metal pan type ceiling cladding • plaster products.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPB3016A Install and finish columns

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to install columns to comply with customer orders, manufacturer's instructions, contractual requirements, specifications and Australian standards.

Application of the Unit

Application of the unit This unit supports the attainment of skills and knowledge to safely and efficiently install and finish plaster columns while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Identify and select materials, processes and equipment.	2.1. Work site is inspected to confirm suitability for the installation of columns. 2.2. Manual handling risks associated with shifting and lifting columns are identified and selected. 2.3. Appropriate employer-approved methods and equipment are identified and selected. 2.4. Processes for installing columns are identified and selected. 2.5. Fasteners and compounds compatible with the column materials are selected from manufacturer specifications. 2.6. Columns are checked to ensure they conform to quality requirements and non-compliance is reported.
3. Fit column and collars.	3.1. Work sequence is planned. 3.2. Columns are installed following the plan. 3.3. Collars and finials are fitted appropriate to customer requirements.
4. Stop and finish joins and edges.	4.1. Stopping material to match the columns is used. 4.2. Ends of columns and collars are finished using appropriate materials.

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ELEMENT	PERFORMANCE CRITERIA
5. Clean up.	5.1. Work area is cleared and materials and fasteners are disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 5.2. Hazardous material is identified for separate handling. 5.3. Non-toxic materials are removed using correct procedures. 5.4. Dust suppression procedures are used to minimise health risk to work personnel and others. 5.5. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools,

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REQUIRED SKILLS AND KNOWLEDGE

equipment or materials

- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- adjusting work activity to maintain quality standards
- application of product and process knowledge to predict consequences and identify improvements
- identifying and applying appropriate safety precautions to safely use equipment, and shift and handle products and materials
- identifying and interpreting manufacturers' product installation procedures and nominated specifications for the work process
- identifying by name and function equipment, components and materials appropriate for internal and external fixing and finishing of columns
- identifying faults in materials or structures where the column is to be fitted
- identifying from workplace information and labels the type and purpose of materials and potential for health and safety risks
- names and architectural styles for different types of columns
- requirements to plan own work.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- select and use appropriate materials and work methods to ensure safe shifting and fixing of columns
- identify application of plaster and fibre cement columns in building applications
- plan and execute work within agreed timeframe and to a high standard under general supervision
- apply a broad knowledge of industry products to identify:
  - manufacturers' components and materials for the system to be installed and the location of the column
  - warranty compliance issues
  - suitable materials for a wide range of applications
- report problems to supervisor and suggest appropriate alternative rectifications
- interpret work order and locate and apply relevant information from building plans and delivery documents
- follow work instructions, operating procedures and inspection practices to:
  - prevent damage to goods, equipment or products
  - select and use appropriate personal protective equipment
  - minimise the risk of injury to self or others

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EVIDENCE GUIDE

- work effectively with other workers on and off site
- modify work activities to cater for variations in work site procedures, personnel, contexts and environment
- maintain workplace records in relation to materials, plant and equipment use
- follow safe handling requirements of equipment, products and materials.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- building framework
- plaster sheet
- tools and equipment.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to

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be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function, for example:

- CPCCCM2010A Work safely at heights.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

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Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to installing and finishing columns
- relevant Australian standards
- safe work procedures relating to installing and finishing columns
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Planning and preparation include:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- equipment defect identification
- work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- hazard control
- hazardous materials and substances
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and

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RANGE STATEMENT

	treatments associated with: • concealed services (water, power and gas) • lighting • traffic control • restricted access barriers • trip hazards • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• broad knives • brooms • electric screw guns • hand and power drills • hand saws • keyhole saws • measuring tapes and rules • paintbrushes • plasterboard hammers • plasterer's trowels • scaffold planks • T squares • taping knives • trestles.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials include:	• beads • cement render • fibre cement sheets • finishing materials • plaster compounds • plasterboard • plasterglass sheets

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RANGE STATEMENT

	• water resistant plasterboard.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Work sequences planning includes:	• approved manual handling techniques • facilitating finishing techniques appropriate to columns • implementing manufacturers' requirements for column installation • minimising finishing problems.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPB3017A Rectify faults in plaster applications

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to identify faults and causes of faults in plasterboard applications and to rectify the faults.

Application of the Unit

Application of the unit This unit supports the attainment of skills and knowledge to safely and efficiently rectify plasterwork faults while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Identify faults.	2.1. Perceived ***faults are identified*** in plaster work. 2.2. ***Faults found*** are described using correct construction industry terminology. 2.3. Appropriate measurements are taken to confirm observed faults.
3. Determine causes of faults and recommend rectification.	3.1. Investigation is conducted to establish ***cause of faults***, including accessing substrate if necessary. 3.2. Faults in structure or substrate are communicated to appropriate personnel. 3.3. Plaster rectification is planned to achieve desired level of finish and rectification of faults is observed. 3.4. Permission to proceed with planned rectification is sought and obtained.
4. Rectify faults.	4.1. Planned rectification process is followed to rectify faults. 4.2. Completed rectifications are inspected to confirm perceived faults have been rectified. 4.3. Sign-off on completed rectification work is sought and obtained from appropriate personnel.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- application of product and process knowledge to predict consequences and identify improvements
- customer liaison skills

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REQUIRED SKILLS AND KNOWLEDGE

- identifying and applying appropriate safety precautions to safely use equipment, and shift and handle products and materials
- identifying and reading manufacturers' product installation procedures and nominated specifications
- identifying fault types, causes and rectification methods
- identifying faults in materials quality and installation and finishing work
- identifying the implications of contract requirements
- job safety analysis (JSA) and safe work method statements
- requirements for a systematic approach to planning own work.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- interpret faults in plaster work from descriptions and observation
- apply a broad knowledge of industry products to identify:
  - manufacturers' components and materials for finishing plaster products and completion of decorated surfaces to minimise effects of glancing light
  - contract and warranty compliance implications of faults
- suggest appropriate alternative rectification for identified problems
- follow work instructions, operating procedures and inspection practices to:
  - prevent damage to goods, equipment or products
  - meet required work output and product quality
  - select and use appropriate personal protective equipment
  - minimise the risk of injury to self or others
- work effectively with other workers on and off site
- modify work activities to cater for variations in work site procedures, personnel, contexts and environment
- maintain workplace records in relation to contract with customers and other trades for

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EVIDENCE GUIDE

	disputed finishes • follow safe handling requirements of equipment, products and materials.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • completed plasterwork with faults • materials • tools and equipment. Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role

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EVIDENCE GUIDE

	and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge • all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed. Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.
Guidance information for assessment	This unit could be assessed on its own or in combination with other units relevant to the job function, for example: • CPCCCM2010A Work safely at heights. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support. Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

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RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to plasterboard
- relevant Australian standards
- safe work procedures relating to plasterboard
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Planning and preparation include:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- equipment defect identification
- work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- hazard control
- hazardous materials and substances
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - concealed services (water, power and gas)
  - lighting
  - traffic control
  - restricted access barriers

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RANGE STATEMENT

	• trip hazards • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• broad knives • brooms • electric screw guns • hand and power drills • hand saws • keyhole saws • measuring tapes and rules • paintbrushes • plasterboard hammers • plasterer's trowels • scaffold planks • T squares • taping knives • trestles.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials include:	• beads • cement render • fibre cement sheets • finishing materials • plaster compounds • plasterboard • plasterglass sheets • water resistant plasterboard.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.

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RANGE STATEMENT

Faults are identified from:	• customers • observation • photographs • supervisors.
Faults include:	• board fracture • bullnose • chisel edge • damaged edges • end peel • hinge plasterboard • hollow joins • ink bleed through • joint tape bubbles • parrot beak • pinholes • scuffing • shoulders • wavy plasterboard.
Cause of faults includes:	• external causes • inappropriate selection of work methods or level of finish • materials or material selection faults • poor workmanship.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPB3018A Use vacuum and electric sanding equipment to finish plaster work

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to machine sand plaster joins in walls and ceilings.

Application of the Unit

Application of the unit This unit supports the attainment of skills and knowledge to safely and efficiently use mechanical equipment to finish plasterwork to specification while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Determine work requirements.	2.1. Work area is inspected to determine work requirements. 2.2. Level of finish as specified in the contract or job order is noted and mismatches between quality of fixing and finishing are recorded and reported or rectified as appropriate for contract. 2.3. Personal protective equipment (PPE) suitable for the task is selected based on manufacturer recommended and employer-approved specification.
3. Mechanically sand joins.	3.1. Work site access is gained using approved workplace methods based on risk assessment for the task, site and circumstance. 3.2. Sanding equipment, leads and any required dust protection or warning signs are set up for use. 3.3. Appropriate stance and posture are used to hold and manipulate sanding equipment to minimise manual handling risks. 3.4. Sanding is completed to required standard of finish. 3.5. Completed sanding work is inspected for compliance with workplace and customer requirements and contracted level of finish.

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ELEMENT	PERFORMANCE CRITERIA
	3.6. Any sand-through areas are reported to appropriate personnel.
	3.7. Sanded area is brushed down.
4. Clean up.	4.1. Sanding dust is collected and contained for disposal in accordance with approved workplace procedures.
	4.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices using appropriate PPE; and recycled in accordance with legislation, regulations, codes of practice and job specification.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current

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REQUIRED SKILLS AND KNOWLEDGE

work site environmental and sustainability frameworks and management systems

- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- application of product and process knowledge to identify problems and predict consequences
- effects of glancing light on plasterboard joins when paint is applied
- factors that influence level of finish
- identifying from workplace information and labels the type and purpose of materials and potential for health and safety risks
- implications on work quality requirements for instruction to be followed
- job safety analysis (JSA) and safe work method statements
- manufacturer and supplier instructions for plant and equipment
- manufacturers' product mixing and/or application procedures and nominated specifications for the work process
- requirements to plan own work
- safely use equipment, shift and handle products and materials.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- select and use appropriate sanding materials and work methods
- ensure that electrical equipment is inspected prior to use and includes required tags, logs and maintenance records prescribed by regulations
- operate from basic instruction without constant supervision
- identify requirements to achieve the specified level of finish
- identify faults in plasterboard fixing, joining and finishing
- execute work within agreed timeframes and standards
- interpret delivery documentation and work orders
- locate relevant materials
- explain warranty, guarantee and liability requirements for plastering work
- apply knowledge of industry requirements to identify:
  - condition and colour of top coat when set
  - manufacturers' components and materials
  - contract compliance requirements
  - reasons for use of P1 rating (protection against mechanically generated particles) or P2 rating (protection against mechanically and thermally generated particles) mask and

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EVIDENCE GUIDE

protective clothing when emptying and cleaning equipment and disposing of dust
    - common faults in materials and work and problems that require reporting
- follow work instructions, operating procedures and inspection practices to:
    - prevent damage to goods, equipment or products
    - maintain equipment in good working condition and identify faults requiring repair by electrician
    - work effectively alone or with others and minimise the risk of injury
    - modify work activities to cater for variations in work site procedures, contexts and environment
    - identify and use appropriate behaviour for interactions with other workers, supervisors, clients and members of the public.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- stopped plasterboard walls and ceilings
- sanding materials
- access methods.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

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EVIDENCE GUIDE

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job

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EVIDENCE GUIDE

function, for example:

- CPCCCM2010A Work safely at heights.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to plasterboard
- relevant Australian standards
- safe work procedures relating to plasterboard
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Planning and preparation include:

- assessment of conditions and hazards
- determination of work requirements:

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RANGE STATEMENT

	• safety plans and policies • joins to be hand sanded • grade of paper to be used • readiness of topcoat for sanding • method of accessing work site • power supply availability on the same level as the work • equipment defect identification • work site inspection.
Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation • hazard control • hazardous materials and substances • organisational first aid • PPE prescribed under legislation, regulations and workplace policies and practices • safe operating procedures, including the conduct of operational risk assessment and treatments associated with: • concealed services (water, power and gas) • lighting • traffic control • restricted access barriers • trip hazards • working at heights • working in confined spaces • working in proximity to others, work site visitors and the public • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• broad knives • brooms • electric screw guns • hand and power drills • hand saws • keyhole saws • measuring tapes and rules

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RANGE STATEMENT

	• paintbrushes • plasterboard hammers • plasterer's trowels • powered sanding machines • scaffold planks • T squares • taping knives • trestles.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials include:	• beads • cement render • fibre cement sheets • finishing materials • plaster compounds • plasterboard • plasterglass sheets • water resistant plasterboard.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPB3019A Inspect equipment for serviceability

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required for equipment users to inspect and report on the safety and operational effectiveness of equipment.

Application of the Unit

Application of the unit This unit supports the attainment of skills and knowledge to inspect equipment to ensure fitness for purpose and safety.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Inspect equipment.	2.1. ***Equipment is inspected*** prior to transport and set up. 2.2. Warning systems are checked for operational effectiveness.
3. Identify and assess impact of faults on work requirements.	3.1. Faults are identified and assessment made of potential effect of the fault on operation of equipment for the required work. 3.2. Faults that may affect the safe operation of the equipment are reported to appropriate personnel for rectification, and equipment is tagged and set aside for repair. 3.3. Accurate reporting of the results of the inspection and testing is made in accordance with ***statutory requirements*** and company policy. 3.4. Records are clear, unambiguous and concise with clear reference made to items that may require replacement or repair in the future.

Required Skills and Knowledge

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- application of product and process knowledge to identify problems and predict consequences
- identifying potential for health and safety risks from workplace information and labels
- identifying the purpose of tags and logs of use for equipment
- implications for work output, safe operations and quality for instructions to be followed

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REQUIRED SKILLS AND KNOWLEDGE

- job safety analysis (JSA) and safe work method statements
- manufacturers' inspection procedures and specifications for the equipment
- names and functions of equipment, components and materials
- operating principles and working components of equipment used
- requirements to plan own work
- safely use equipment, shift and handle products and materials.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- select and use appropriate equipment and work methods
- operate from basic instruction without constant supervision
- identify faults in equipment
- interpret delivery documentation and work orders
- locate relevant materials
- apply knowledge of industry products to identify:
  - manufacturers' instructions for equipment
  - wear that may require maintenance in the future
  - compatible components for running repairs
- follow work instructions, operating procedures and inspection practices to:
  - identify damage to goods, equipment or products
  - select and use appropriate personal protective equipment
  - work effectively alone or with others and minimise the risk of injury
  - maintain workplace records in relation to materials, plant and equipment use
  - use safe handling requirements, based on information provided for equipment, products and materials.

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EVIDENCE GUIDE

Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • equipment • specifications • maintenance records • tools. Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured

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EVIDENCE GUIDE

learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to equipment for serviceability

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RANGE STATEMENT

	• relevant Australian standards • safe work procedures relating to equipment for serviceability • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • traffic control
	  • restricted access barriers
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment include:	• broad knives • brooms • drills • drop saws

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RANGE STATEMENT

	• hand and power drills • hand saws • keyhole saws • ladders • measuring tapes and rules • paintbrushes • plasterboard hammers • plasterer's trowels • scaffold • screw guns • sheet lifters • T squares • taping knives • trestles and planks.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials include:	• beads • cement render • fibre cement sheets • finishing materials • plaster compounds • plasterboard • plasterglass sheets • water resistant plasterboard.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.

Equipment is inspected in accordance with:	• pre-operational functional safety check procedures and manufacturer specifications for:
	  • damage
	  • leaks
	  • obstructions that may limit operational capability
	  • worn requirements.

Statutory requirements include	• federal, state and local authorities administering the applicable Acts, regulations

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RANGE STATEMENT

those of:	and codes of practice.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPB3020A Match, mitre and install cast ornamental cornices

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to measure, match, cut and fix cast ornamental cornices.

Application of the Unit

Application of the unit This unit supports the attainment of skills and knowledge to safely and efficiently install mitred ornamental cornices while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Plan and measure for cornice work.	2.1. Style and type of cornice to be fitted is determined from work instructions. 2.2. Cornice length for each work area is determined and noted. 2.3. Cornice is handled following approved manual handling procedures. 2.4. Requirements for safe work at heights are identified and planned for use.
3. Cut cornice lengths.	3.1. Matching points for ornamental cornice are determined and marked. 3.2. Cornice is cut using workplace approved guides and cutting methods. 3.3. Pattern match is checked.
4. Prepare cornice adhesive.	4.1. Manufacturers' instructions are consulted and applied to the preparation of the adhesive. 4.2. Preparation of cornice adhesive is carried out. 4.3. Adhesive powder is added to water until powder can absorb no more water. 4.4. Consistency of mix is adjusted to suit hand or mechanical application of adhesive.

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ELEMENT	PERFORMANCE CRITERIA
5. Fix cornice.	5.1. Means for safe access for work at heights is used where required. 5.2. Methods of holding cornice temporarily in place are planned and used following workplace-approved procedures. 5.3. Appropriate amount of adhesive is applied to cornice. 5.4. Cornice is fitted following workplace-approved practices for access to work at heights and manual handling.
6. Finish work.	6.1. Excess cornice adhesive is removed. 6.2. Joins, pattern matches and junctions are filled and smoothed. 6.3. Temporary fixings and supports are removed and holes filled.
7. Clean up.	7.1. Work area is cleared and materials and adhesives are disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 7.2. Hazardous material is identified for separate handling. 7.3. Non-toxic materials are removed using correct procedures. 7.4. Dust suppression procedures are used to minimise health risk to work personnel and others. 7.5. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:

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REQUIRED SKILLS AND KNOWLEDGE

- follow instructions
- read and interpret:
  - documentation from a variety of sources
  - drawings and specifications
- recognise procedures
- report faults
- enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication, such as hand signals
- written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- adjusting work activity to maintain quality standards
- application of product and process knowledge to predict consequences and identify improvements
- identifying and applying appropriate safety precautions to safely use equipment, and shift and handle products and materials
- identifying and reading manufacturers' product installation procedures and nominated specifications for mixing adhesives, and fixing and cutting cornices
- identifying faults in materials and construction that may influence the match mitre process
- identifying materials used for hand and machine-made cornices by name and general application
- identifying from workplace information and labels the type and purpose of materials and potential for health and safety risks for cornice and adhesives

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REQUIRED SKILLS AND KNOWLEDGE

- job safety analysis (JSA) and safe work method statements
- requirements for safe lifting and temporary fixing of cornice and safe work at heights.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- identify work order or contract and delivery documentation and match to delivered cornice
- plan materials use and match mitres to minimise waste and maximise decorative effect
- select and use appropriate cornice materials and work methods
- plan and execute work within agreed timeframe and to a high standard under general supervision
- apply a broad knowledge of industry products to identify:
  - hand manufactured and machine-made cornices
  - materials used in hand manufactured cornices and precautions for safe cutting
- identify problems in pattern matching and cornice fixing and suggest appropriate alternative rectifications
- interpret building plans and delivery documents to match cornice type to appropriate rooms
- follow work instructions, operating procedures and inspection practices to:
  - prevent damage to goods, equipment or products
  - meet required work output and product quality

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EVIDENCE GUIDE

- select and use appropriate personal protective equipment
- minimise the risk of injury to self or others
- work effectively with other workers on and off site
- modify work activities to cater for variations in work site procedures, personnel, contexts and environment
- maintain workplace records in relation to materials, plant and equipment use
- follow safe handling requirements of equipment, products and materials.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- building framework with plasterboard clad walls
- cast cornices
- materials
- tools and equipment.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or

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simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application

- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function, for example:

- CPCCCM2010A Work safely at heights.

Reasonable adjustments for people with disabilities must be made to assessment processes

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EVIDENCE GUIDE

where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to plasterboard
- relevant Australian standards
- safe work procedures relating to fixing wall tiles
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Planning and preparation include:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- equipment defect identification
- work site inspection.

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RANGE STATEMENT

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • traffic control
	  • restricted access barriers
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment include:	• broad knives • brooms • electric screw guns • hand and power drills • hand saws • keyhole saws • measuring tapes and rules • paintbrushes • plasterboard hammers • plasterer's trowels • scaffold planks • T squares • taping knives • trestles.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards

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RANGE STATEMENT

	• manufacturer specifications • workplace operations and procedures.
Materials include:	• beads • cement render • fibre cement sheets • finishing materials • plaster compounds • plasterboard • plasterglass sheets • water resistant plasterboard.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Preparation of cornice adhesive is carried out using:	• approved personal protective equipment • clean container • clean water.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPB3021A Install and fix residential acoustic plaster products

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to install residential acoustic plaster systems under direction.

Application of the Unit

Application of the unit This unit supports the attainment of skills and knowledge to safely and efficiently install acoustic-rated plaster products in residential construction projects while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Identify work requirements.	2.1. Substrate is inspected to confirm suitability for acoustic system rating specified. 2.2. Manufacturers' installation advice is used to identify required ***processes for installing acoustic system***.
3. Select materials, processes and equipment.	3.1. Equipment and processes are selected to match tasks. 3.2. Fasteners, sealers and penetration seals compatible with system performance requirements are selected from manufacturer specifications.
4. Fix acoustic system.	4.1. Acoustic systems are hung to implement manufacturers' requirements for acoustic system installation. 4.2. Edges of board are caulked using appropriate materials. 4.3. Completed work is checked to confirm that it meets acoustic system rating specified, manufacturer specifications and Australian standards.
5. Clean up.	5.1. Site area is cleaned up with waste board collected for recycling, and adhesives and waste fasteners are disposed of in approved bins, reused or recycled in accordance with legislation, regulations, codes of

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ELEMENT	PERFORMANCE CRITERIA
	practice and job specification. 5.2. Hazardous material is identified for separate handling. 5.3. Non-toxic materials are removed using correct procedures. 5.4. Dust suppression procedures are used to minimise health risk to work personnel and others. 5.5. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current

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REQUIRED SKILLS AND KNOWLEDGE

work site environmental and sustainability frameworks and management systems

- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- application of product and process knowledge to predict consequences and identify improvements
- identifying and applying appropriate safety precautions to safely use equipment, and shift and handle products and materials
- identifying and interpreting manufacturers' product installation procedures and nominated specifications for the work process
- identifying faults in building construction that may influence the eventual sound rating
- interpreting manufacturer and supplier instructions for sound attenuation properties of materials
- job safety analysis (JSA) and safe work method statements
- requirements for a systematic approach to planning own work.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- assemble and use appropriate acoustic materials and work methods
- apply a broad knowledge of industry products to identify:
  - manufacturers' components and materials to the requirements of the building and the contract
  - contract and warranty compliance issues for inappropriate selection and installation of acoustic system
  - suitable materials for a wide range of applications
- report problems to supervisor and suggest appropriate alternative rectifications
- locate and apply relevant information from building plans to identify factors that may influence acoustic rating in different parts of the building structure
- follow work instructions, operating procedures and inspection practices to:
  - prevent damage to goods, equipment or products
  - meet required work output and product quality
  - select and use appropriate personal protective equipment
  - minimise the risk of injury to self or others
- work effectively with other workers on and off

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EVIDENCE GUIDE

	site • modify work activities to cater for variations in work site procedures, personnel, contexts and environment • maintain workplace records in relation to materials, plant and equipment use • follow safe handling requirements of equipment, products and materials.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • access to building framework • acoustic system materials • tools and equipment. Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and

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EVIDENCE GUIDE

environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function, for example:

- CPCCCM2010A Work safely at heights.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

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Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to plasterboard
- relevant Australian standards
- safe work procedures relating to plasterboard
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Planning and preparation include:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- equipment defect identification
- work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- hazard control
- hazardous materials and substances
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - concealed services (water, power and gas)

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RANGE STATEMENT

	• lighting • traffic control • restricted access barriers • trip hazards • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• broad knives • brooms • electric screw guns • hand and power drills • hand saws • keyhole saws • measuring tapes and rules • paintbrushes • plasterboard hammers • plasterer's trowels • scaffold planks • T squares • taping knives • trestles.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures. • relevant regulations including Building Code of Australian (BCA) and Australian standard 2499 - 1981, 1530 Parts 1 and 3 and provisions for the geographic location, local government or energy authority.
Materials include:	• beads • cement render • fibre cement sheets • finishing materials • plaster compounds

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RANGE STATEMENT

	• plasterboard • plasterglass sheets • water resistant plasterboard.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Processes for installing acoustic system include:	• assessing acoustic materials • quality checks for acoustic system • work sequence.

Manufacturers' requirements for acoustic system installation include:	• cutting and hanging sheets to:
	  • maximise board use
	  • minimise joints
	  • minimise waste
	• minimising finishing problems
	• using fasteners and penetration seals.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPB3022A Use mechanical jointing equipment to finish joints

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to use mechanical taping and filling tools to finish joints.

Application of the Unit

Application of the unit This unit supports the attainment of skills and knowledge to safely and efficiently joint plaster using mechanical means while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Plan the use of mechanical taping and filling tools.	2.1. ***Work requirements*** are identified and assessed. 2.2. Penetrations and openings requiring barriers are identified. 2.3. Amount of compound required is estimated. 2.4. Length required for tool handle is measured.
3. Prepare for work.	3.1. Barriers are erected at identified points. 3.2. Floor is cleared and cleaned. 3.3. Compound is mixed to required consistency using appropriate personal protective equipment (PPE) and safe work methods when mechanically mixing compound. 3.4. Tool handle is adjusted to required length.
4. Complete mechanical filling and taping operations.	4.1. Filling is completed with minimum compound loaded for immediate use. 4.2. Internal angles are reinforced with a smooth and even appearance. 4.3. Flat joins are completed so that they are smooth and even and properly reinforced to form a seamless appearance. 4.4. Proper posture is maintained during use.

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ELEMENT	PERFORMANCE CRITERIA
	4.5. Tasks are rotated in accordance with work site risk assessment.
5. Complete mechanical finishing operations.	5.1. Finishing is completed with minimum compound loaded for immediate use. 5.2. Joins are finished to produce a smooth and even, seamless appearance. 5.3. Proper posture is maintained during use.
6. Clean up.	6.1. Spilt compound is cleaned from floor. 6.2. Work area is cleared and excess compound is returned to container or disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 6.3. Hazardous material is identified for separate handling. 6.4. Non-toxic materials are removed using correct procedures. 6.5. Dust suppression procedures are used to minimise health risk to work personnel and others. 6.6. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults

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REQUIRED SKILLS AND KNOWLEDGE

- enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication, such as hand signals
- written skills to record results of checks and tests and relevant work completion procedures

- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- application of product and process knowledge to predict consequences and identify improvements
- identifying and rectifying faults in operation of equipment or materials quality
- identifying by name and function equipment and materials used for mechanical taping
- identifying from workplace information and labels the type and purpose of materials and potential for health and safety risks
- interpreting manufacturer and supplier safe use instructions for equipment and materials
- requirements for a systematic approach to planning own work.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the

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EVIDENCE GUIDE

Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to:
	• explain requirements for mechanically finished joins for:
	  • flat joins
	  • internal angles
	  • external angles
	  • ceiling joints
	  • square set joins
	• select and use appropriate materials and work methods
	• plan and execute work within agreed timeframe and meet the contracted requirements under general supervision
	• identify problems in mechanical taping and filling tool operations and suggest appropriate alternative rectifications
	• interpret work order and locate and apply relevant information from building plans and delivery documents
	• follow work instructions, operating procedures and inspection practices to:
	  • prevent damage to goods, equipment or products
	  • meet required work output and product quality
	  • select and use appropriate PPE
	  • minimise the risk of injury to self or others
	• work effectively with other workers on and off site
	• modify work activities to cater for variations in work site procedures, personnel, contexts and environment

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EVIDENCE GUIDE

- follow workplace-approved safe manual handling requirements for equipment, products and materials.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- unfinished plasterboard wall and ceiling
- tools
- materials and equipment.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over

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EVIDENCE GUIDE

	a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge • all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed. Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.
Guidance information for assessment	This unit could be assessed on its own or in combination with other units relevant to the job function, for example: • CPCCCM2010A Work safely at heights. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support. Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

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Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to plasterboard
- relevant Australian standards
- safe work procedures relating to plasterboard
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Planning and preparation include:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- equipment defect identification
- work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- hazard control
- hazardous materials and substances
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - concealed services (water, power and gas)
  - lighting

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RANGE STATEMENT

	• traffic control • restricted access barriers • trip hazards • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• measuring tapes and rules • plasterboard hammers • broad knives • plasterer's trowels • taping knives • electric screw guns • T squares • keyhole saws • hand saws • hand and power drills • brooms • trestles • scaffold planks • paintbrushes.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials include:	• beads • cement render • fibre cement sheets • finishing materials • plaster compounds • plasterboard • plasterglass sheets • water resistant plasterboard.
Environmental requirements include:	• clean-up management • dust and noise • vibration

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RANGE STATEMENT

Assessment of ***work requirements*** includes:	• waste management. • length of runs • obstacles and barriers • penetrations • safe access for work.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPB3023A Load and unload plaster and plaster-related products

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to identify critical characteristics of plaster loads and to safely load and unload plaster and plaster-related products in accordance with workplace requirements and relevant government regulations.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to safely and efficiently handling a range of plaster and plasterboard products while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Equipment selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Load and unload goods.	2.1. Appropriate loading and unloading procedures are employed, based upon identified ***load characteristics***. 2.2. Loading follows loading regulations, including road transport lengths and widths and workplace safety requirements. 2.3. Load shifting aids and appliances are selected and used to aid loading procedures following approved workplace procedures for manual handling. 2.4. Unloading activities are conducted following approved work methods. 2.5. Unloading is conducted efficiently, taking into account suitable locations, storage, safe use of equipment (where applicable) and balance of remaining load.
3. Secure and protect load.	3.1. Load is secured using appropriate load restraints and protection equipment for different loads and carrying and storage conditions. 3.2. Load is protected form weather and to ensure safety in transit. 3.3. Distribution of the load is checked to ensure that it is

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ELEMENT	PERFORMANCE CRITERIA
	even, legal and within safe working load limits.
4. Complete documentation.	4.1. Load is inspected and checked for security to travel. 4.2. Required documentation for the goods is completed following workplace, carrier and regulatory requirements.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:

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REQUIRED SKILLS AND KNOWLEDGE

- use a range of mobile technology, such as two-way radio and mobile phones
- voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- adjust work activity to maintain quality standards
- application of product and process knowledge to identify problems and predict consequences
- identify dimensions and mass of items to be shifted or transported and compare with vehicle and building
- identify shape, load and balance characteristics of products and equipment used
- identify faults in operation of equipment or materials quality
- identify from workplace information and labels the type and purpose of materials and potential for health and safety risks
- identify the purpose of tags and logs of use for equipment
- implications on personal health and quality of delivered product for instruction to be followed
- job safety analysis (JSA) and safe work method statements
- manufacturer and supplier instructions for plant and equipment
- names and functions of equipment, components and materials
- requirements to plan own work
- safely use equipment, shift and handle products and materials
- total weights of individual items to estimate overall load and compare with safe working loads for vehicles, scaffold, equipment and manual handling.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- select and use appropriate loading and securing materials and work methods
- operate from basic instruction without constant supervision
- execute work within agreed timeframes and standards
- interpret delivery documentation and work orders
- locate relevant materials
- explain warranty, guarantee and liability requirements for plastering work
- apply knowledge of industry products to identify:
  - manual handling risks
  - warranty compliance issues
  - common faults and problems that require reporting
- follow work instructions, operating procedures and inspection practices to:
  - prevent damage to goods, equipment or products
  - meet required work output and quality
  - select and use appropriate personal protective equipment
  - work effectively alone or with others and minimise the risk of injury
  - modify work activities to cater for

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EVIDENCE GUIDE

	variations in work site procedures, contexts and environment • identify and use appropriate behaviour for interactions with other workers, supervisors, clients and members of the public • maintain workplace records in relation to materials, plant and equipment use • use safe handling requirements, based on information provided for equipment, products and materials.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • products • load carrying vehicle • securing devices. Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning

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EVIDENCE GUIDE

knowledge required for practical application

- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating

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RANGE STATEMENT

conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to plasterboard
- relevant Australian standards
- safe work procedures relating to plasterboard
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Planning and preparation include:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- equipment defect identification
- work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- hazard control
- hazardous materials and substances
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - concealed services (water, power and gas)
  - lighting
  - traffic control
  - restricted access barriers
  - trip hazards
  - work site visitors and the public
  - working at heights

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RANGE STATEMENT

	• working in confined spaces • working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials include:	• beads • cement render • fibre cement sheets • finishing materials • plaster compounds • plasterboard • plasterglass sheets • water resistant plasterboard.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Load characteristics include:	• balance • dimensions • shape • volume • weight.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPB3024A Use manual handling equipment to manoeuvre plaster products

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to use mechanical aids in the shifting of loads.

Application of the Unit

Application of the unit This unit supports the attainment of skills and knowledge to safely and efficiently handle plaster and plasterboard products using suitable manual handling equipment while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Assess risks arising from the relocation of the load.	2.1. Products, goods or materials to be relocated are identified. 2.2. Characteristics of load in relation to weight, shape, balance and dimensions are identified. 2.3. Environmental factors influencing the shift, including wind, trip hazards, wet conditions and traffic (vehicular and personal), are assessed for effect on personal safety. 2.4. Appropriate strategies for shifting load are selected based on workplace-approved manual handling procedures. 2.5. Location for storage is determined. 2.6. Routes to be followed and potential risks are identified and strategies to minimise risks are identified. 2.7. Points of balance are estimated. 2.8. Procedures for safe use of lifting equipment to minimise risks are identified.
3. Plan load relocation.	3.1. Required load shifting equipment is selected and the safe working load (SWL) and working load limit (WLL) are identified and compared to the load to be

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ELEMENT	PERFORMANCE CRITERIA
	shifted. 3.2. Process for relocating load proposed is determined, including planning for potential difficulties in the work environment. 3.3. Proposed process is checked against relevant code of practice and workplace procedures for compliance. 3.4. Lifting equipment and accessories are checked for safe operation following manufacturers' instructions and workplace procedures.
4. Relocate load.	4.1. Unsafe equipment is reported to appropriate personnel. 4.2. Planned process and route are followed, using equipment within necessary range of limitations. 4.3. Relocated materials are set down without damage to goods, personnel or equipment and checked for stability. 4.4. Relocation is checked to see that it meets work requirements, and any variations are reported. 4.5. Equipment is returned to storage area.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences

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REQUIRED SKILLS AND KNOWLEDGE

- use and interpret non-verbal communication, such as hand signals
- written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- adjust work activity to maintain quality standards
- application of product and process knowledge to identify problems and predict consequences
- identify dimensions and mass of items to be shifted or transported and compare with vehicle and building
- identify faults in operation of equipment or materials quality
- identify from workplace information and labels the type and purpose of materials and potential for health and safety risks
- identify shape, load and balance characteristics of products and equipment used
- identify the purpose of tags and logs of use for equipment
- implications on personal health and quality for product for instructions to be followed
- job safety analysis (JSA) and safe work method statements
- manufacturer and supplier instructions for plant and equipment
- names and functions of equipment, components and materials
- requirements to plan own work
- safely use equipment, shift and handle products and materials
- total weights of individual items to estimate overall load and compare with safe working loads for vehicles, scaffold, equipment and manual handling.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- select and use appropriate workplace-approved manual handling equipment and work methods
- operate from basic instruction without constant supervision
- execute work within agreed timeframes and standards
- apply knowledge of industry products to identify:
  - manual handling risks
  - warranty compliance issues
  - common faults in products being unloaded and problems that require reporting
- follow work instructions, operating procedures and inspection practices to:
  - prevent damage to goods, equipment or products
  - work effectively alone or with others and minimise the risk of injury
  - modify work activities to cater for variations in work site procedures, contexts and environment
  - identify and use appropriate behaviour for interactions with other workers, supervisors, clients and members of the public
  - use safe handling requirements, based on information provided for equipment,

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EVIDENCE GUIDE

	products and materials.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • materials • mechanical handling equipment • work site. Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the

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EVIDENCE GUIDE

workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos

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RANGE STATEMENT

	• regulatory and legislative requirements pertaining to plasterboard • relevant Australian standards • safe work procedures relating to plasterboard • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • traffic control
	  • restricted access barriers
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment include:	• electrical equipment • stationary and moving plant, equipment and materials.

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RANGE STATEMENT

Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials include:	• beads • cement render • fibre cement sheets • finishing materials • plaster compounds • plasterboard • plasterglass sheets • water resistant plasterboard.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPB3025A Store plasterboard and related products

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to store plaster and plaster products on site or in warehouses.

Application of the Unit

Application of the unit This unit supports the attainment of skills and knowledge to safely and efficiently store plasterboard products while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Identify products to be stored and appropriate stock records and inventory systems.	2.1. Products to be stored are identified. 2.2. Potential uses, frequency and order of use of materials, or frequency of dispatch to other parts of the job or to fill orders, are established. 2.3. Size, shape and special storage requirements of the storage space are determined. 2.4. Stock and inventory system requirements are identified. 2.5. Relevant product information, including instructions, care labels and product identification information are located.
3. Prepare storage area.	3.1. Requirements for safe storage are identified. 3.2. Storage arrangements take into account ***potential damage to goods***. 3.3. Appropriate work site clearances for use of storage area are obtained. 3.4. Storage areas are cleared of waste and contaminants and required safety equipment is installed. 3.5. Storage areas are planned to safely and effectively store goods based on frequency and order of use, safe

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ELEMENT	PERFORMANCE CRITERIA
	height, weight and size.
	3.6. Access and working space for ***safe handling*** of materials are established with others working in the work site.
4. Store materials and goods.	4.1. Condition of materials and goods is observed on arrival and any product below specification is returned to source.
	4.2. Materials and goods are stored and where appropriate, stacked appropriately for safe working load, size and crushability of goods.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current

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REQUIRED SKILLS AND KNOWLEDGE

work site environmental and sustainability frameworks and management systems

- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- application of product and process knowledge to identify problems and predict consequences
- identify dimensions and mass of items to be shifted or transported and compare with vehicle and building
- identify shape, load and balance characteristics of products and equipment used
- identify faults in operation of equipment or materials quality
- identify potential for health and safety risks from inappropriate storage of plasterboard and plaster products
- identify the purpose of tags and logs of use for equipment
- implications on product quality for instruction for storage to be followed
- job safety analysis (JSA) and safe work method statements
- manufacturer and supplier instructions for safe use of plant, equipment and storage systems
- names and functions of equipment, components and materials
- requirements to plan own work
- safely use equipment, shift and handle products and materials
- total weights of individual items to estimate overall load and compare with safe working loads for vehicles, scaffold, equipment and manual handling.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- explain reasons for providing moisture protection
- protect the board from weather and moisture from slabs
- select and use appropriate storage methods
- operate from basic instruction without constant supervision
- execute work within agreed timeframes and standards
- interpret delivery documentation and work orders
- locate relevant materials
- explain warranty, guarantee and liability requirements for plastering work
- apply knowledge of industry products to identify:
  - warranty compliance issues that may arise from inappropriate storage
  - common faults in plasterboard and plaster products and problems that require reporting
- follow work instructions, operating procedures and inspection practices to:
  - prevent damage to goods, equipment or products
  - work effectively with, and minimise the risk of injury to self and other workers
  - modify work activities to cater for

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EVIDENCE GUIDE

	variations in work site procedures, contexts and environment • identify and use appropriate behaviour for interactions with other workers, supervisors, clients and members of the public • maintain workplace records in relation to materials, plant and equipment use • use safe handling requirements, based on information provided for equipment, products and materials.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • work site • materials • plasterboard. Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning

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knowledge required for practical application

- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating

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RANGE STATEMENT

conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to plasterboard
- relevant Australian standards
- safe work procedures relating to plasterboard
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Planning and preparation include:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- equipment defect identification
- work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- hazard control
- hazardous materials and substances
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - concealed services (water, power and gas)
  - lighting
  - traffic control
  - restricted access barriers
  - trip hazards
  - work site visitors and the public
  - working at heights

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RANGE STATEMENT

	• working in confined spaces • working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• broad knives • brooms • electric screw guns • hand and power drills • hand saws • keyhole saws • measuring tapes and rules • paintbrushes • plasterboard hammers • plasterer's trowels • scaffold planks • T squares • taping knives • trestles.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials include:	• beads • cement render • fibre cement sheets • finishing materials • plaster compounds • plasterboard • plasterglass sheets • water resistant plasterboard.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Requirements for safe storage include:	• horizontal stacking where possible • providing protection against moisture migration from below • risks of product falling or being damaged

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RANGE STATEMENT

	• safe working loads for racks and floor • storing product type and quantity • weatherproof area.
Potential damage to goods includes from:	• handling • moisture • other stored items • other work activities on the site.
Safe handling includes:	• forklifts • manual handling equipment • safe shifting by personnel • scissor lifts.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPB3026B Erect and maintain trestle and plank systems

Modification History

Minor editorial change in PC 1.6
Equivalent to CPCCPB3026A

Unit Descriptor

This unit of competency specifies the outcomes required to erect and monitor trestle and plank work platforms.

Application of the Unit

This unit supports the attainment of skills and knowledge to safely and efficiently erect, use and maintain plank and trestle systems on a construction site while working with others as a member of a team.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes.
		1.2	***Safety (OHS)*** requirements are followed in accordance with safety plans and policies.
		1.3	Signage and barricade requirements are identified and implemented.
		1.4	***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement.
		1.5	Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***.
		1.6	Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
		1.7	***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2	Inspect work site.	2.1	Type of trestle and plank system required is identified from work site and work instructions.
		2.2	Work area is cleaned of rubbish or unnecessary materials.
		2.3	Risks to other workers, power supply and other services are assessed.
		2.4	Access to erected trestle and plank platform is planned.
		2.5	Access of plaster products and tools from the plank is planned.

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3	Erect trestle and plank system.	3.1	Trestle and plank system is selected to meet the Australian standard AS6001-1999 and work requirements.
		3.2	Trestle system components are collected and located at work site.
		3.3	Trestles and planks are inspected for serviceability as determined by the Australian standards.
		3.4	Trestles are appropriately positioned for the work and the planks to be used.
		3.5	Planks are fitted to the trestles at the required height using authorised procedures and within work site or regulatory restrictions.
4	Inspect system.	4.1	Trestle and plank work platform is inspected before and during use.
		4.2	Faults found are reported to supervisor and rectifications are conducted or system is labelled to prevent use pending repair.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- identifying faults in operation of equipment
- identifying potential for health and safety risks from workplace information and labels
- identifying the purpose of tags and logs of use for equipment

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- job safety analysis (JSA) and safe work method statements
- manufacturer and supplier instructions for plant and equipment
- names and functions of equipment, components and materials
- requirements to plan own work
- safely use equipment, shift and handle products and materials.

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- identify situations where the use of trestle and plank system is appropriate
- explain benefits of one trestle and plank system compared to another
- select and use appropriate trestles, planks and work methods
- operate from basic instruction without constant supervision
- identify faults in trestles and planks
- execute work within agreed timeframes and standards
- interpret manufacturers' documentation
- apply knowledge of industry products to identify:
  - trestle and plank systems that meet the Australian standard
  - common faults in trestle and plank systems and problems that require reporting
- follow work instructions, operating procedures and inspection practices to:

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- prevent damage to goods, equipment or products
- work effectively alone or with others and minimise the risk of injury
- modify work activities to cater for variations in work site procedures, contexts and environment
- identify and use appropriate behaviour for interactions with other workers, supervisors, clients and members of the public
- maintain workplace records in relation to materials, plant and equipment use
- use safe handling requirements, based on information provided for equipment, products and materials.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- work site
- trestles
- planks.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to

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confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function, for example:

- CPCCCM2010A Work safely at heights.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and

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numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to plasterboard
- relevant Australian standards
- safe work procedures relating to plasterboard
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Planning and preparation include:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- equipment defect identification
- work site inspection.

Safety (OHS) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- hazard control
- hazardous materials and substances
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices

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- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - concealed services (water, power and gas)
  - lighting
  - traffic control
  - restricted access barriers
  - trip hazards
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Tools and equipment include:

- trestles
- scaffold planks.

Quality requirements include relevant regulations, including:

- Australian standards AS6001-1999, AS/NZS4576 Guidelines for Scaffolding.
- internal company quality policy and standards
- manufacturer specifications
- workplace operations and procedures.

Environmental requirements include:

- clean-up management
- dust and noise
- vibration
- waste management.

Trestle and plank work platform is inspected to identify:

- loose components
- damage to trestles or planks
- displacement of components.

Unit Sector(s)

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Functional area

Unit sector Construction

Custom Content Section

Not applicable.

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CPCCPB3027A Install ceiling insulation

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to install ceiling insulation to comply with safety requirements as well as environmental requirements for energy efficiency ratings in accordance with sustainable building practices. It includes identifying and complying with applicable legislative requirements, planning and preparing for work, installing ceiling insulation, and completing installation and post-work clean-up activities.

This unit may be an essential requirement for registration to install ceiling insulation. Registration requirements may vary in different states and territories.

At the time of endorsement, this unit meets the regulatory requirements of the Government's *Energy Efficient Homes Package*.

Application of the Unit

Application of the unit

This unit supports those individuals who safely and efficiently install ceiling insulation while working with others as members of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements,

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Prerequisite units

	policies and procedures in the construction industry

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify legislative, regulatory, and organisational requirements.	1.1. ***Safety*** and applicable ***legislative requirements*** are identified and complied with. 1.2. Organisational environmental and safety plans and policies are identified and complied with according to ***organisational requirements***. 1.3. ***Safe work methods and practices*** are identified and applied according to organisational safety plans and policies. 1.4. ***Environmental requirements*** are identified and applied according to organisational environmental plans and regulatory requirements. 1.5. ***Emergency response and evacuation procedures*** are identified and carried out when required.
2. Plan and prepare for installing insulation.	2.1. ***Work instructions*** and relevant ***information*** are obtained and confirmed for ***planning and preparation*** purposes. 2.2. Risk assessment is undertaken to identify existing risks and ***hazards*** in the work area, including ***electrical risks and hazards***. 2.3. Identified risks are documented and ***appropriate response*** is undertaken according to safety requirements. 2.4. ***Ceiling insulating material*** and ***insulation requirements*** are confirmed in accordance with work specifications. 2.5. Appropriate ***personal protective equipment*** (PPE) and clothing are identified, correctly fitted, and used according to organisational policies and procedures. 2.6. ***Tools and equipment*** are selected appropriate to the requirements of the work, confirmed for serviceability, and reported for repair or replacement where not serviceable. 2.7. ***Associated material*** is determined and organised ready for use according to ***quality requirements*** and work plans and specifications.
3. Install ceiling insulation.	3.1. Insulation material is accurately measured to minimise waste. 3.2. Insulation is ***installed*** using approved processes and handling techniques according to manufacturer specifications and relevant ***electrical and building regulations***.

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ELEMENT	PERFORMANCE CRITERIA
	3.3. Dust-suppression procedures are used to minimise health risk in work area to self and others.
	3.4. Insulation is installed safely without damage or distortion of the surrounding environment, electrical and other services and in a manner that maximises safety of self and others.
	3.5. Variations and difficulties affecting performance or quality requirements of own work are identified and reported.
4. Complete installation.	4.1. Final inspections are conducted to ensure installed ceiling insulation conforms to job and manufacturer specifications.
	4.2. Notification of work completion is made to designated personnel according to organisational procedures.
	4.3. Work area is cleaned and ***materials*** are disposed of, reused or recycled according to organisational, safety and environmental requirements.
	4.4. Tools and equipment are cleaned, checked, maintained and stored according to manufacturer specifications and organisational procedures.
	4.5. Malfunctions, faults, wear or damage to tools, equipment and site are accurately documented and reported for repair or replacement according to organisational procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- self-management skills to:
  - adjust work activity to maintain quality standards
  - evaluate own actions and make judgments about performance and necessary improvements
- communication skills to:
  - communicate clearly and directly, using questioning to identify and confirm requirements

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REQUIRED SKILLS AND KNOWLEDGE

- follow instructions
- listen and understand
- share information
- use and interpret non-verbal communication, such as hand signals
- use language and concepts appropriate to cultural differences

- literacy skills to:
  - read and interpret:
    - company procedures
    - documentation from a variety of sources
    - drawings and specifications
    - material safety data sheets (MSDS), job safety analyses (JSA), safe work method statements, and risk assessments
  - recognise and interpret work-related signs, such as safety logos and warnings
  - report faults, safety risks and hazards
  - record results of checks and tests and relevant work-completion procedures
- numeracy skills to calculate insulation material quantities
- identify and report to designated personnel any faults in tools, equipment or materials
- identify faults in insulation materials
- organisational skills to:
  - identify and document wiring that is likely to be adversely affected by the retrospective installation of thermal insulation
  - identify and document hazards, including electrical
  - plan, prioritise and set out work
- problem-solving skills to:
  - respond to change
  - address safety concerns and seek specialist advice where required
- teamwork skills to:
  - relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
  - work with others to action tasks
- technological skills to:
  - use a range of mobile technology, such as two-way radios and mobile phones
  - voice and hand signals to access and understand site-specific instructions

Required knowledge

- appropriate PPE and its use to reduce injury and electric shock
- ceiling insulation material types and quality requirements
- common health and safety risks associated with handling ceiling insulation
- common workplace safety hazards and risks, and procedures for reporting these to

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REQUIRED SKILLS AND KNOWLEDGE

designated personnel

- emergency response and evacuation procedures
- environmental requirements, including waste management and recycling
- hierarchy of hazard control
- legislation, regulation and building codes related to ceiling insulation
- MSDS, JSA and safe work method statements
- methods for calculating insulation material quantities
- organisational requirements and procedures relating to ceiling insulation installation, including requirements for a systematic approach to planning own work
- procedures to safely use equipment, shift and handle products and materials, and work at heights and in enclosed areas
- product and process knowledge to identify problems and predict consequences
- relationships of 'R' rating with Building Code of Australia (BCA) and Australian standards' requirements and energy ratings
- tools and equipment prohibited for use near identified asbestos-containing materials (ACM)
- type and purpose of tags and logs of use for equipment
- types, characteristics, uses and limitations of installation tools and equipment
- types, possible location and risks of ACM, including serpentine and amphibole groups, and their use on common building materials
- reason for the operating temperature limit of electrical cables
- effect on cables partially surrounded by thermal insulation and fully surrounded by thermal insulation
- common wiring systems used in domestic premises indicating the age of the installation
- wiring not likely to be adversely affected by the retrospective installation of thermal insulation; note: the following conditions shall apply:

1. cables are thermoplastic sheathed (white), and
2. cables are in continuous contact with a surface (e.g. laying on ceiling lining, fixed to structural members) or in a position where they cannot be partially or fully surrounded by thermal insulation

- clearance of thermal insulation from recessed downlights and ancillary equipment in accordance with AS/NZS 3000:2007 Clause 4.5.2.3; note:

1. Clause 4.5.2.3 in part states:
    - recessed luminaires and their auxiliary equipment shall be installed in such a manner that necessary cooling air movement through or around the luminaire is not impaired by thermal insulation or other material
    - where thermal insulation is of a type that is not fixed in position (e.g. loose fill), a barrier or guard constructed of fire-resistant material shall be provided and secured in position to maintain the necessary clearance
2. any barriers placed around recessed luminaires shall not be enclosed and allow the

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REQUIRED SKILLS AND KNOWLEDGE

heat from the luminaire to dissipate freely

- electrical hazards in roof spaces, including unenclosed connections, unenclosed conductors, damaged cable sheaths and exposed conductors
- risk assessment documentation and actions to take where:
  - wiring is of a type likely to be adversely affected by the installation of thermal insulation, and
  - electrical hazards are present
  - note: this requires the engagement of a licensed electrician through an electrical contractor to evaluate the suitability of the wiring for the retrospective installation of thermal insulation and to rectify electrical hazards
- hazards related to polystyrene, polyurethane and metallic foil; note:

1. polystyrene and polyurethane have a detrimental effect on electrical insulation, reducing the effective safe service life of the cables and should not be used where there is a likelihood of contact with electrical cables
2. metallic foil is electrically conductive, therefore appropriate tools, equipment and fixings must be selected

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the required skills and knowledge specified in this unit.

In particular the person should demonstrate the ability to:

- apply knowledge of industry products to identify:
  - common faults and problems
  - manufacturer specifications in relation to insulation properties of the available product
  - manufacturer components and materials
  - relationships of 'R' rating with BCA and Australian standards' requirements and energy ratings
- apply knowledge for the safe installation of thermal insulation in relation to electrical equipment, including:

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EVIDENCE GUIDE

- effects of thermal insulation on cables
- wiring likely to be adversely affected by the retrospective installation of thermal insulation
- clearance of thermal insulation from recessed downlights and ancillary equipment

- complete a risk assessment sheet for each installation which documents:
  - whether the wiring system is compatible with thermal insulation
  - number of recess luminaires in ceiling and how the clearances are to be met
  - electrical hazards, and measures taken to eliminate them
  - relevant work instructions
- communicate and work effectively and safely with others
- comply with organisational policies and procedures, including quality requirements
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- follow work instructions, operating procedures and inspection practices to:
  - maintain workplace records in relation to materials, plant and equipment use
  - modify work activities to cater for variations in workplace procedures, personnel, contexts and environment
  - prevent damage to the environment, equipment, products, or site
  - select and use appropriate PPE
  - work effectively alone or with others and operate with minimal supervision
  - select and use non-conductive and insulated tools and materials to minimise electrical hazards
- locate, interpret and apply relevant information, standards and specifications
- select and install ceiling insulation on at least two occasions within agreed timeframes and standards using safe handling methods for materials and equipment.

Context of and specific resources for

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment,

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EVIDENCE GUIDE

assessment

provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

This unit is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- ceiling spaces
- materials and tools.

Assessment of this unit may be in conjunction with assessment of other units commonly performed at the same time in normal work roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and work roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a

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EVIDENCE GUIDE

number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Safety requirements are to be in accordance with commonwealth, state and territory legislation and regulations, organisational safety plans and policies, and include:

- emergency procedures, including evacuation and provision of first aid
- hazard control procedures
- hazardous materials and substances
- electrical hazards
- PPE prescribed under legislation, regulations and workplace policies and practices
- reporting hazards, incidents, injuries, near misses and identified ACM
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - manual handling

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RANGE STATEMENT

- concealed services, including water, power and gas
- lighting
- traffic control
- restricted access barriers
- trip hazards
- power sources and leads
- power tools, including cutting tools
- workplace visitors and the public
- working at heights
- working in enclosed areas
- working in proximity to others
- types of fire and use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements.

Commonwealth, state and territory ***legislative requirements*** include:

- Australian standards, including working at heights requirements:
  - AS 6001:1999 Working platforms for domestic application
  - AS 1576 Scaffolding
  - AS/NZS4576:1995 Guidelines for scaffolding
- conduct on-site operational assessment of electrical risk and implement control measures to prevent it
- construction industry OHS standards and guidelines
- duty of care
- health and safety representatives, committees and supervisors
- licences, tickets and certificates of competency
- National Code of Practice for Induction Training for Construction Work
- national safety standards
- OHS and welfare Acts and regulations
- safety codes of practice, and JSA and safe work method statements.

Organisational requirements relate to:

- access and equity policy, principles and practice
- client service standards
- defined resource parameters
- emergency and evacuation procedures
- employer and employee rights and responsibilities
- OHS policies, procedures and programs
- organisational goals, objectives, plans, systems and

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RANGE STATEMENT

	processes • organisational policies and procedures, including personnel practices and guidelines • own role and responsibility • quality and continuous improvement processes and standards.
Safe work methods and practices relate to:	• access to site amenities, such as drinking water and toilets • avoiding unnecessary risks • awareness of existing and potential hazards • day to day observation of OHS policies and procedures • general requirements for safe use of plant, tools and equipment • general requirements for use of PPE and clothing • housekeeping to ensure a clean, tidy and safe work area • no drugs and alcohol at work • preventing bullying and harassment • risk assessment • smoking in designated areas • storage and removal of debris • use of plant and equipment guards.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management and recycling.
Emergency response and evacuation procedures include:	• emergencies, such as fire, toxic and/or flammable vapours emission, vehicle/mobile plant accident, structural collapse, chemical spill and injury to personnel, including electric shock • evacuation • extinguishing fires • first aid.
Work instructions may include:	• completion dates • work requirements and tasks • procedures for installing insulation in relation to electrical equipment • electrical isolation and tagging of work area • site access information • risk assessment documentation • safety measures for electrical hazards • specific client and site requirements

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RANGE STATEMENT

Information includes:

- work schedules.
- diagrams or sketches
- drawings, plans and specifications
- instructions issued by authorised organisational or external personnel
- log books
- manufacturer specifications and instructions
- MSDS
- memos
- regulatory and legislative requirements pertaining to installing ceiling insulation
- relevant Australian standards
- safe work procedures relating to installing ceiling insulation
- signage
- suppliers' information
- verbal and written instructions, including diagrams
- work bulletins.

Planning and preparation relate to:

- assessing conditions and hazards
- determining work requirements and safety plans and policies
- identifying equipment defects
- inspecting workplaces.

Hazards may include:

- asbestos dust and fibres
- asbestos containing materials
- enclosed areas (e.g. heat stress)
- dust from fibreglass and other insulation materials
- electrical hazards
- inability of ceiling structure to support additional weight of insulation materials and installers
- manual handling hazards (e.g. knee and back injury)
- noise, plant and equipment hazards
- slips, trips and falls
- synthetic mineral fibres
- working at heights.

Electrical risks and hazards include:

- unenclosed connections
- unenclosed conductors
- damaged cable sheaths
- exposed conductors
- wiring that is likely to be adversely affected by retrospective installation

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- not following specified clearances/insulation barriers around recessed luminaires
- not observing operating temperature limit of electrical cables
- wiring system age
- using polystyrene, polyurethane and metallic foil-based products.

Appropriate response may include:

- engaging a licensed electrician to evaluate suitability of wiring
- isolating and tagging work area
- seeking changes to work instructions
- deciding not to undertake work
- reporting to designated personnel
- following OHS legislative requirements.

Ceiling insulating material includes:

- batts and blankets:
  - glasswool
  - glasswool/rockwool - foil attached
  - polyester
  - rockwool
  - sheep's wool
- boards:
  - expanded polystyrene
  - expanded polystyrene - foil attached
  - extruded polystyrene (styrofoam)
- loose fills:
  - cellulose fibre
  - granulated rockwool
  - sheep's wool
- reflective:
  - foil batts
  - multi-layer reflective
  - roll-form reflective foil laminate (RFL).

Insulation requirements:

- ***as determined by BCA and Australian standards AS/NZS 4859.1, AS 4200.1, AS 4200.2 (2006)***
- ***include***:
  - approved system radiative transfer (RT) calculations
  - downward R-values
  - upward R-values.

Personal protective

- aprons

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equipment includes:

- arm guards
- caps
- dust masks and respirators
- ear muffs and plugs
- gloves
- hard hats
- harnesses and ropes
- high visibility retro reflective vests
- jackets
- overalls
- safety glasses and goggles
- steel-capped boots
- UV protective clothing and sunscreen.

Tools and equipment:

- include:
  - broad knives
  - brooms
  - caulking guns
  - electric screw guns
  - hammers
  - hand saws
  - keyhole saws
  - ladders
  - manual levelling devices
  - measuring tapes and rules
  - nail bags
  - power drills
  - power leads
  - power saws
  - spanners
  - spirit levels
  - T squares
  - taping knives
  - tin snips
  - trestles
  - trowels
  - non-conductive and insulated tools
- may include:
  - air compressors and hoses
  - C clamps

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RANGE STATEMENT

- docking saw and drop saws
- laser levelling devices
- masonry drills
- nail guns
- pop riveters
- saw stools
- scaffolding and planks.

Associated materials include:

- adhesive
- ceiling products
- downlight covers
- fibrous plaster
- jointing tape
- metal and aluminium type products
- nails
- non-conductive fixing devices
- plasterboard
- screws
- sealants
- staples
- steel safety mesh.

Quality requirements incorporate relevant regulations and include:

- Australian standards
- internal organisational quality policy and standards
- manufacturer specifications
- workplace operations and procedures.

Installation includes:

- employer-approved manual handling techniques
- manufacturer recommended methods and fasteners
- maintaining specified clearances from recessed luminaires
- installing thermal insulation barriers to luminaires and other electrical equipment according to manufacturer's recommendations and applicable standards, including AS/NZS3000:2007
- work sequences and fixing processes that minimise waste and maximise material.

Electrical and building regulations may include:

- BCA
- Australian standards such as:
  - AS 3999:1992 Thermal insulation of dwellings - Bulk insulation - Installation requirements
  - AS/NZS 4859.1:2002 Materials for the thermal insulation of buildings - Testing and labelling of

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RANGE STATEMENT

insulation

- AS/NZS 4200 Pliable building membranes and underlays - reflective foils
- AS/NZS 4200.1 Part 1: Materials - reflective foils
- AS/NZS 4200.2 Part 2: Installation requirements - reflective foils
- AS 1366.1 Rigid cellular polyurethane (RC/PUR) - other insulations
- AS 1366.2 Rigid cellular polyisocyanurate (RC/PIR) - other insulations
- AS 1366.3 Rigid cellular polystyrene moulded (RC/PS-M) - other insulations
- AS 1366.4 Rigid cellular polystyrene - extruded (RC/PS)
- AS 4073 Urea-formaldehyde foam thermal insulation - In situ set foam BCA insulation levels - Other insulations.
- AS/NZS 3000:2007 (with Amd 1) Wiring Rules, in particular Clause 4.5.2.3.

Materials include:

- hazardous materials
- non-toxic materials.

Unit Sector(s)

Unit sector Construction

Competency field

Competency field Plasterboard

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CPCCPD2011A Handle painting and decorating materials

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to handle, sort and store painting and decorating materials.

The unit includes planning and preparing for the work; identifying, handling and storing materials; and selecting and distributing appropriate housekeeping standards. Environmentally sustainable practices are required for waste disposal and equipment cleaning.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to handle painting and decorating materials, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Tools and equipment are selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Materials quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Identify, handle and store painting and decorating materials.	2.1. ***Materials and components*** are identified and checked for conformity to material schedule, plans and specifications and ***environmental characteristics***. 2.2. Handling characteristics of ***painting and decorating material*** and components are identified and safe and effective handling techniques adopted. 2.3. Storage locations are confirmed as satisfying fire safety, ventilation and product dispersal requirements. 2.4. Materials are handled safely and effectively according to material safety data sheets (MSDS) and requirements of regulatory authorities.
3. Identify, handle and store painting and decorating materials.	3.1. Painting and decorating materials are sorted to suit material type and size, and stacked for ease of identification and retrieval. 3.2. Painting and decorating material and components are ***protected*** against physical and water damage and stored clear of traffic ways.
4. Select and distribute painting and decorating materials in preparation for use.	4.1. Painting and decorating products, material and components are identified, selected from stack and safely handled and distributed to required job location. 4.2. Storage/holding area at job location is checked to

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ELEMENT	PERFORMANCE CRITERIA
	ensure provision of adequate ventilation, fire safety and dispersal.
	4.3. Painting and decorating materials are stored to best serve their subsequent use.
	4.4. Work areas are prepared, including the removal of objects and the use of drop sheets to protect surrounding surfaces.
5. Clean up.	5.1. Hazardous material is identified for separate handling by authorised personnel.
	5.2. Work area is cleared and material disposed of in a safe and effective manner in accordance with state and territory requirements.
	5.3. Unused materials are sealed and stored/stacked in accordance with standard material handling practices.
	5.4. Non-paint ***Waste materials and debris*** are removed and placed into job waste bins or rubbish stockpile in a safe and effective manner in accordance with environmental requirements.
	5.5. ***Paint waste, water and solvents*** used in cleaning painting equipment are disposed of in an environmentally sustainable manner and in accordance with relevant legislative requirements
	5.6. Likelihood of spontaneous combustion is identified and suitable protective measures are applied.
	5.7. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations, ***environmental sustainability requirements*** and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:

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REQUIRED SKILLS AND KNOWLEDGE

- determine requirements
- enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
- follow instructions
- read and interpret:
  - documentation from a variety of sources
  - drawings and specifications
- report faults
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication, such as hand signals

- evaluating own actions and making judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- recognising procedures, following instructions, responding to change and contributing to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- teamwork skills to coordinate own work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- basic spontaneous combustion theory
- job safety analysis (JSA) and safe work method statements
- MSDS
- materials storage and environmentally sustainable waste management, including correct disposal of water-based, latex-based and solvent-based paints
- painting and decorating terminology
- processes for the calculation of material requirements
- quality requirements
- types, titles, packaging and storage requirements for commonly encountered painting and decorating materials
- Australian Paint Approval Scheme (APAS) classifications
- types of paints, including the characteristics and uses of paint materials with various volatile organic compound (VOCs) levels and alternative and natural paints
- solid waste and paint sludge disposal techniques and relevant legislation, including

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REQUIRED SKILLS AND KNOWLEDGE

Environmental Protection Authority (EPA) and local Council regulations

- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- safely and effectively identify, handle, store and distribute painting and decorating materials, which are to include a range of coatings and two each of:
  - cleaning solvents
  - fillers
  - adhesives.
- dispose of all paint types in an environmentally sustainable way compliant with relevant local legislation and regulations
- clean and store painting equipment using environmentally sustainable methods and work practices including waste reticulation systems.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

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EVIDENCE GUIDE

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role

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and the practical requirements of the workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS

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RANGE STATEMENT

	• memos • regulatory and legislative requirements pertaining to handling of painting and decorating materials • relevant Australian standards • safe work procedures relating to handling of painting and decorating materials • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including solvents, lead, chemicals, fumes/gases
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • electrical and fire and/or explosion from combustible materials
	  • falling objects
	  • lighting
	  • manual handling
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers

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RANGE STATEMENT

	• solvents, lead, chemicals, fumes/gases • surrounding structures • traffic control • trip hazards • work access platforms • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others, work site visitors and the public • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Quality requirements include:	• internal company quality policy and standards • manufacturer specifications, where specified • relevant regulations, including Australian standards • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • stormwater protection • low odour and emissions • waste management.

Materials and components:	• include:
	  • cleaning solvents
	  • coatings
	  • fillers and adhesives
	• may include wall and decorative covering materials.

Environmental characteristics can Include but is not limited to:	• low odour and low-VOC (Volatile Organic Compound) paint
	• no-VOC paint
	• non-toxic paint
	• alternative and natural paint and paint materials
	• brushware
	  • natural bristle
	  • nylon
	  • microcellular synthetic bristles

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RANGE STATEMENT

Painting and decorating material include:	• water-based • solvent-based • two-pack • textures.
Protection of stacked/stored materials includes:	• barricades • covering • lock away (for hazardous materials) • signs.
Waste materials and debris includes:	• banding straps • cardboard • excess material • packing pieces
Paint waste, water and solvents disposal includes:	• use of manual and machine environmentally sustainable cleaning methods • cleaning water re-cycling or professional disposal • solid waste disposal requirements
Environmental sustainability requirements include:	• correct paint storage to minimise waste • recycling • use and storage of volatile materials

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPD2012A Use painting and decorating tools and equipment

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to use painting and decorating tools, plant and equipment.

The unit includes the identification, selection and safe use of a range of commonly used painting and decorating tools, plant and equipment and the storage and user maintenance of these.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to use painting and decorating tools and equipment, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Materials quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.5. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.6. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Identify hand and power tools.	2.1. Hand and power tools, their functions, operations and limitations are identified. 2.2. OHS requirements for using hand tools are recognised and adhered to. 2.3. OHS requirements for using power tools are recognised and adhered to.
3. Select tools for project.	3.1. ***Tools and equipment*** are selected consistent with job requirements. 3.2. Tools, including leads and hoses, are checked for tags, serviceability and safety and any faults are rectified or reported. 3.3. Power tool guards, retaining bolts, couplings, gauges and controls are checked and maintained in accordance with manufacturer recommendations. 3.4. Equipment to hold or support material during operation is selected. 3.5. Pre-operational checks, including lubricants, hydraulic fluid and water, are completed in accordance with manufacturer recommendations.
4. Use tools.	4.1. Power and compressed air supply are connected to work area. 4.2. Start-up and shut-down procedures are followed. 4.3. Tools are safely and effectively used according to manufacturer recommendations and OHS

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ELEMENT	PERFORMANCE CRITERIA
	requirements. 4.4. Tools are safely located when not in immediate use.
5. Select plant and equipment.	5.1. Function and limitations of plant and equipment used in painting and decorating are identified. 5.2. ***Plant and equipment*** are selected consistent with hazard minimisation and needs of job. 5.3. Method of operation of plant and equipment is identified. 5.4. OHS requirements for operating and using plant and equipment are recognised and adhered to. 5.5. Plant and equipment are checked for safety and faults are rectified or reported.
6. Use plant and equipment.	6.1. Plant and equipment are safely and effectively used. 6.2. Plant and equipment are safely located when not in immediate use. 6.3. Plant and equipment are cleaned, maintained and stored after use.
7. Clean up.	7.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 7.2. Machinery, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions

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REQUIRED SKILLS AND KNOWLEDGE

- read and interpret:
  - documentation from a variety of sources
  - drawings and specifications
- report faults
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication, such as hand signals
- evaluating own actions and making judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- recognising procedures, following instructions, responding to change and contributing to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- teamwork skills to coordinate own work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- painting and decorating industry terminology
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- types, characteristics, uses and limitations of painting and decorating hand tools and power tools
- types, characteristics, uses and limitations of painting and decorating plant items
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures including quality requirements • safely and effectively operate and use tools, plant and equipment • communicate and work effectively and safely with others • use and maintain the mandatory tools listed in the range statement • use and maintain at least two of the mechanical sanding equipment types listed in the range statement • use, operate and maintain conventional and airless spray equipment.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include:

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- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and

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EVIDENCE GUIDE

separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to painting and decorating tools and equipment
- relevant Australian standards
- safe work procedures relating to the use of

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RANGE STATEMENT

	painting and decorating tools and equipment • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • manual handling
	  • noise, dust and ventilation
	  • power cables, including overhead service trays, cables and conduits
	  • power equipment, leads and sources
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others

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RANGE STATEMENT

	• working with cutting edges • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Quality requirements include:	• internal company quality policy and standards • manufacturer specifications, where specified • relevant regulations, including Australian standards • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • stormwater protection • waste management.

Tools and equipment include:	• brushware
	• brushware accessories
	• buckets
	• covers
	• drop sheets
	• duster brushes
	• filling knives and blades
	• hammers
	• hand sanders
	• heat guns
	• mechanical sanders, including:
	  • belt
	  • disc
	  • orbital
	  • random orbital
	• nail punches
	• paint pots and buckets
	• paint stirrers
	• putty knives
	• roller accessories
	• roller frames
	• scrapers
	• wire brushes.

Plant and equipment include:	• airless spray equipment • conventional spray equipment (e.g. compressor)

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RANGE STATEMENT

- water blasters.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPD2013A Remove and replace doors and door and window components

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to remove and replace doors and door and window furniture for the purpose of painting or replacement.

The unit includes reglazing and planning and preparation for the work, the removal and replacement of doors and door and window furniture and completion of clean-up activities.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to remove and replace doors and door and window furniture for painting, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Tools and equipment are selected to carry out tasks that are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Materials quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Remove door and window furniture.	2.1. Screens and fittings are carefully removed and stored safely. 2.2. ***Window furniture*** is carefully removed and located or stored safely. 2.3. ***Door furniture*** is carefully removed and located or stored safely. 2.4. Doors are carefully removed and located or stored safely.
3. Install glass to doors and windows.	3.1. Old panes of glass are removed from doors and windows safely, without undue damage and demonstrating correct hacking procedure. 3.2. Right type and style of glass for replacement in keeping with the finish and purpose of door or window is determined. 3.3. Appropriate glass for replacement is sourced, measured and cut as required determining the correct fixing method for installation. 3.4. Door or window aperture is cleaned, repaired and primed prior to installation of new glass. 3.5. New glass is installed to specification and required finish.

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ELEMENT	PERFORMANCE CRITERIA
4. Replace doors and door and window furniture.	4.1. Doors are carefully handled, placed, hung and fixed into original place. 4.2. Door furniture is refitted and fixed back into place to specifications and without marking door or surrounds. 4.3. Window furniture is refitted and fixed back into place to specifications and without marking window surfaces or surrounds. 4.4. Screens are replaced securely in position without damage to surrounds.
5. Clean up.	5.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 5.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- evaluating own actions and making judgments about performance and necessary

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REQUIRED SKILLS AND KNOWLEDGE

improvements

- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- recognising procedures, following instructions, responding to change and contributing to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- teamwork skills to coordinate own work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- correct and safe procedures for removal and replacement of glass
- door and window furniture removal and replacement techniques
- glass cutting techniques
- job safety analysis (JSA) and safe work method statements
- materials storage and environmentally friendly waste management
- painting and decorating and basic carpentry terminology
- plans, drawings and specifications
- quality requirements
- safe handing techniques for glass
- types, uses and limitations of tools used in the removal and replacement of door and window furniture
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- remove and replace components ensuring surrounding areas and furniture components remain undamaged
- safely and effectively remove and replace a minimum of:
  - one door with an independent screen
  - furniture from two different door types
  - furniture from two different window types with at least one having independent screens
  - glazing from a timber door or window.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

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EVIDENCE GUIDE

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace

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EVIDENCE GUIDE

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements

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RANGE STATEMENT

	pertaining to the removal and replacement of doors and door and window furniture • relevant Australian standards • safe work procedures relating to the removal and replacement of doors and door and window furniture • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • manual handling
	  • power cables, including overhead service trays, cables and conduits
	  • power leads
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • use of hand and power tools

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RANGE STATEMENT

	• work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • working with glass • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Quality requirements include:	• internal company quality policy and standards • manufacturer specifications, where specified • relevant regulations, including Australian standards • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • waste management.
Window furniture includes:	• brackets • catches • handles • locks • screens • stays.
Door furniture includes:	• closers • handles • hinges • latches • locks • safety chains • screens.

Unit Sector(s)

Unit sector Construction

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Functional area

Functional area

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CPCCPD3021A Prepare surfaces for painting

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to restore, repair and prepare different material surfaces for the application of paint.

The unit includes planning and preparation for the work, preparation of new or uncoated surfaces, preparation of previously coated surfaces, preparation of previously wallpapered surfaces for painting and completion of clean-up activities.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to prepare surfaces for painting, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Materials quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied. 1.8. Finishes to be applied to all surfaces are identified in accordance with job requirements, and application that complies with manufacturer specifications.
2. Prepare new or uncoated surfaces for painting or clear finish.	2.1. Suitability of ***surface*** for painting or clear finish application is determined in accordance with manufacturer recommendations and job specifications. 2.2. Surface preparation method is correctly selected in accordance with the environment, finish and substrate requirements. 2.3. Surface is prepared to manufacturer specifications in compliance with substrate requirements, specifications and relevant standards. 2.4. Surface imperfections are stopped, filled and sanded to a smooth finish ready for painting in accordance with manufacturer recommendations and job specifications.
3. Prepare previously coated surfaces for painting or clear finish.	3.1. Condition and nature of ***existing substrate and surface*** material are determined and ***tested*** in accordance with relevant standards. 3.2. Potential hazards are identified and correct

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ELEMENT	PERFORMANCE CRITERIA
	procedures are used to reduce risks in accordance with manufacturer recommendations and job specifications.
	3.3. ***Surface preparation method*** is correctly selected in accordance with the environment, finish and substrate requirements.
	3.4. Surfaces are prepared by removing unwanted coatings and loose debris.
	3.5. Surface defects are repaired and imperfections stopped, filled and sanded to smooth finish ready for painting in accordance with manufacturer recommendations and job specifications.
4. Remove wallpaper and prepare surface for painting.	4.1. Type, condition and nature of existing type of wallpaper are determined prior to removal.
	4.2. Surface preparation method is correctly selected in accordance with the environment, finish and substrate requirements.
	4.3. ***Wallpaper is removed*** using the most appropriate method.
	4.4. Surfaces are prepared for paint application by removing loose debris.
	4.5. Surface defects are repaired and imperfections stopped, filled and sanded to smooth finish ready for painting in accordance with manufacturer recommendations and job specifications.
5. Clean up.	5.1. Waste and unwanted materials are removed and placed into job waste bins or rubbish stockpile in accordance with sound work practices and compliance with environmental requirements.
	5.2. Painting tools and equipment are cleaned with correct solutions and without damage, and are stored safely and effectively to manufacturer specifications.
	5.3. Unused materials are sealed and stored/stacked in accordance with standard material handling practices and techniques and company requirements.
	5.4. Work area is cleared and materials disposed of or recycled in a manner to avoid spontaneous combustion in accordance with legislation, regulations, codes of practice and job specification.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- evaluating own actions and making judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- recognising procedures, following instructions, responding to change and contributing to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- teamwork skills to coordinate own work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- corrosion processes and techniques for the protection of metals
- hazards associated with lead, asbestos, solvents, chemicals and dust
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- paint application testing procedures

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REQUIRED SKILLS AND KNOWLEDGE

- painting and decorating terminology
- plans, drawings and specifications
- prevention and/or rectification procedures for surface coating defects
- procedures, products and techniques associated with preparation of surfaces
- procedures, products and techniques associated with removal of wallpaper
- processes for the calculation of material requirements
- properties and surface preparation requirements of new substrates
- quality requirements
- required protection for application of clear or stained finishes
- surface coating technology
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to:
	• locate, interpret and apply relevant information, standards and specifications
	• comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
	• comply with organisational policies and procedures including quality requirements
	• safely and effectively operate and use tools, plant and equipment
	• communicate and work effectively and safely with others
	• prepare a minimum of four surfaces for painting to specification:
	  • one being a new gyprock surface of a minimum 8 square metres and one new surface of a minimum of 1 square metre or 8 lineal metres
	  • three being previously coated surfaces with one being an external timber surface, one an internal surface and one a metal or masonry surface
	• remove wallpaper from a room, cubicle or equivalent and prepare the surface for painting.

Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

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EVIDENCE GUIDE

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role

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EVIDENCE GUIDE

and the practical requirements of the workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS

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RANGE STATEMENT

	• memos • regulatory and legislative requirements pertaining to the preparation of surfaces for painting • relevant Australian standards • safe work procedures relating to the preparation of surfaces for painting • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • electrical and fire and/or explosion from combustible materials
	  • falling objects
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • solvents, lead, asbestos, chemicals, fumes/gases, manual handling

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RANGE STATEMENT

	• surrounding structures • traffic control • trip hazards • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• drop sheets • duster brushes • filling knives and blades • hammers • hand sanders • heat removal equipment • mechanical sanders • nail punches • putty knives • scrapers • water blasters • wire brushes.
Quality requirements include:	• internal company quality policy and standards • manufacturer specifications, where specified • relevant regulations, including Australian standards • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • stormwater protection • waste management.
Surface includes:	• horizontal or vertical • inclined or curved • internal or external • timber, metal, masonry, concrete or plaster.
Existing substrate and surface may be contaminated with:	• dust • films of grease • mild chalking • mild efflorescence

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RANGE STATEMENT

	• mould
	• paint films that are:
	  • blistering
	  • flaking
	  • peeling
	  • cracking
	• smoke damage.

Tested includes:	• adhesion test • solvent test • testing procedures to determine the presence of lead-based paints and asbestos.
Surface preparation method includes:	• chemical stripping • grinding • sanding • scraping (mechanical and hand) • use of heat guns • washing down • water blasting.
Wallpaper removal methods include:	• dry stripping • soaking • steam stripping.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPD3022A Apply paint by brush and roller

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to apply brushed or rolled paint coatings to different materials to form a protective and decorative painted finish.

The unit includes planning and preparation for the work, preparation of the work area, mixing of materials, application of paint, finishing of the surface and completion of clean-up activities.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to apply paint by brush and roller, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** are selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Materials quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied. 1.8. Work planning is undertaken in consideration of environmental factors such as light, weather and dust.
2. Prepare work area and materials.	2.1. If necessary, materials and ***substrate surfaces*** are prepared in accordance with manufacturer recommendations and relevant Australian standards. 2.2. Surrounding surfaces not to be painted are protected by drop sheets, masking or removal of objects in accordance with manufacturer recommendations and job specifications. 2.3. Where doors, windows and associated furniture are removed they are stacked, stored and protected correctly and safely. 2.4. Job location is checked to ensure provision of adequate ventilation and precautions are taken to prevent fire and explosion in accordance with manufacturer recommendations and material safety data sheet (MSDS) data. 2.5. Materials for specified paint finish are mixed to designed proportion and consistency in accordance with manufacturer recommendations and job

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ELEMENT	PERFORMANCE CRITERIA
	specifications.
	2.6. ***Paint*** and colours are thoroughly stirred, using separate stirring sticks or other suitable proprietary devices.
	2.7. Correct amounts of paint material are prepared to specified ratio and drying time in accordance with manufacturer recommendations and specifications.
3. Apply paint with brush or roller.	3.1. Brush, roller or brush/roller combination is selected for specified surface profile, size of area, type of paint and finish specified in accordance with manufacturer recommendations and job specifications.
	3.2. ***Paint is applied*** to achieve required level of opacity, finish, texture and sheen in accordance with manufacturer recommendations and job specifications.
4. Finish the application.	4.1. Finished paint surface is cured using curing method in accordance with manufacturer recommendations and job specifications.
	4.2. Finished paint surface is ***tested*** using testing procedures in accordance with manufacturer recommendations and job specifications.
	4.3. Doors, windows and furniture removed for painting application are re-installed correctly and without damage to finished surfaces.
5. Clean up.	5.1. Painting tools and equipment are cleaned with correct solutions and without damage, and are stored safely and effectively to manufacturer specifications.
	5.2. Unused materials are sealed and stored/stacked in accordance with standard material handling practices and techniques and company requirements.
	5.3. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.
	5.4. Work area is cleared and materials disposed of or recycled in accordance with legislation, regulations, codes of practice and job specification.

Required Skills and Knowledge

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- evaluating own actions and making judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- recognising procedures, following instructions, responding to change and contributing to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- teamwork skills to coordinate own work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- compatibility of preparatory materials and paint systems
- hazards associated with solvents, chemicals and dust
- job safety analysis (JSA) and safe work method statements
- materials storage and environmentally friendly waste management
- MSDS
- painting and decorating terminology
- plans, drawings and specifications

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REQUIRED SKILLS AND KNOWLEDGE

- processes for the calculation of material requirements
- quality requirements
- responsibilities with regard to:
  - conservation areas
  - environmental requirements
  - heritage listed buildings
- surface coating technology, including specification of paint systems for interior and exterior painting projects to maximise durability, protection and aesthetic considerations
- testing techniques and support materials
- theoretical principles relating to adhesion and cohesion of paint
- theoretical principles relating to pigmentation and colouring agents, drying and curing processes and the role of solvents
- types, uses and limitations of commonly used brushes and rollers
- variances in work carried out within sectors of painting and decorating industry for:
  - new building (residential, commercial and high rise)
  - maintenance, renovation and refurbishment
  - restoration
  - conservation
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- apply paint by brush and roller (with finishes being to specification, including in terms of defects, thickness, colour, level of opacity, finish, texture and sheen), to a range of surfaces, including:
  - four different surface types
  - a minimum application of 6 square metres brushed or rolled
  - a timber panel door
  - a flush door
  - a timber window, including architrave and frame with moving parts (e.g. box frame, hopper and awning).

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements

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EVIDENCE GUIDE

and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

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EVIDENCE GUIDE

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions,

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RANGE STATEMENT

	where specified • MSDS • memos • regulatory and legislative requirements pertaining to the application of paint by brush and roller • relevant Australian standards • safe work procedures relating to the application of paint by brush and roller • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • falling objects
	  • lighting
	  • manual handling
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • solvents, chemicals, fumes/gases

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RANGE STATEMENT

	• surrounding structures • traffic control • trip hazards • work access platforms • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others, work site visitors and the public • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment:	• include: • brushware • brushware accessories • drop sheets • paint pots and buckets • paint stirrers • roller frames • may include: • duster brushes • filling knives and blades • hammers • hand sanders • heat and flame paint removal equipment • mechanical sanders • nail punches • putty knives • scrapers • wire brushes.
Quality requirements include:	• internal company quality policy and standards • manufacturer specifications, where specified • relevant regulations, including Australian standards • workplace operations and procedures.
Materials include:	• adhesives • cleaning solvents • fillers.

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RANGE STATEMENT

Environmental requirements include:	• clean-up management • dust and noise • stormwater protection • waste management.
Surfaces to be painted include:	• horizontal or vertical • inclined or curved • internal or external • timber, metal, masonry, concrete or plaster.
Paint coatings may be:	• solvent-based • two-pack • water repellent for timber • water-based.
Paint products may be classified as:	• sealers • primers • sealer and undercoats • undercoats and intermediate coats • finish coats.
Paint applications:	• are to be in accordance with Australian standards unless this is replaced by other authorised job specifications.
Tests include:	• wet film thickness test.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPD3023A Apply texture coat paint finishes by brush, roller and spray

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to apply texture coat paint finishes to different surfaces by using brush, roller and spray.

The unit includes planning and preparation for the work, preparation of the work area and materials, application of the texture coat paint and completion of clean-up activities.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to apply texture coat paint finishes by brush, roller and spray, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, ***tools and equipment*** are selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Materials quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Prepare materials and application area.	2.1. Area is set up for ***application processes*** to suit application system being used. 2.2. Adjoining surfaces to application area are protected by masking off or covering, prior to application of texture coat paint. 2.3. Adequate ventilation to application area is provided to maintain a safe environment. 2.4. Measures are taken to ensure application area remains free of dust and foreign matter. 2.5. ***Application*** system and equipment are prepared for use. 2.6. Fittings are checked for function and security prior to use in accordance with manufacturer recommendations. 2.7. Texture coat paint is mixed and adjusted to allow for application process in accordance with manufacturer recommendations, plans and specification.
3. Apply texture coat by brush and roller.	3.1. Application equipment is used in accordance with manufacturer recommendations and job specifications. 3.2. ***Texture coat paint*** is applied to ***surface*** using

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ELEMENT	PERFORMANCE CRITERIA
	correct application technique to achieve an even finish with opacity and sheen level in accordance with the job specification.
	3.3. Defects in coating are identified and corrective action is taken to achieve the required finish in accordance with job specification.
4. Apply texture coat by spray.	4.1. Spray equipment is operated to standard operating procedures in accordance with manufacturer recommendations.
	4.2. Texture coat paint is applied to surface using correct application technique to achieve an even finish with opacity and sheen level in accordance with the job specification.
	4.3. Defects in coating are identified and corrective action taken to achieve the required paint finish in accordance with the job specification.
5. Clean up.	5.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	5.2. ***Paint waste***, ***water and solvents*** used in cleaning painting equipment are disposed of in an environmentally sustainable manner and in accordance with relevant legislative requirements
	5.3. Paint waste, water and solvents used in cleaning painting equipment are disposed of in an environmentally sustainable manner and in accordance with relevant legislative requirements
	5.4. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

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REQUIRED SKILLS AND KNOWLEDGE

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- evaluating own actions and making judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- recognising procedures, following instructions, responding to change and contributing to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- teamwork skills to coordinate own work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- applicator system types, characteristics, uses and limitations
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally sustainable waste management, including correct disposal of water-based, latex-based and solvent-based paints
- painting and decorating terminology
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- Australian Paint Approval Scheme (APAS) classifications
- types of paints, including the characteristics and uses of paint materials with various volatile organic compound (VOCs) levels and alternative and natural paints
- solid waste and paint sludge disposal techniques and relevant legislation, including

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REQUIRED SKILLS AND KNOWLEDGE

Environmental Protection Authority (EPA) and local Council regulations

- surface preparation techniques related to texture coatings
- texture coat paint systems technology
- texture coatings and their properties, uses and limitations
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- prepare and apply to specification texture coat paints using brush and roller and either spray or one other applicator system, to a minimum of:
  - one complete wall a minimum of 5 square metre with 2 hard edges
  - one complete wall, ceiling to floor including an internal corner (e.g. wall junction and ceiling/wall junction)
  - one complete window reveal
- dispose of all paint types in an environmentally sustainable way compliant with relevant local legislation and regulations
- clean and store painting equipment using environmentally sustainable methods and work practices including waste reticulation

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EVIDENCE GUIDE

	systems.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and

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EVIDENCE GUIDE

environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches

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RANGE STATEMENT

	• instructions issued by authorised organisational or external personnel • manufacturer specifications and instructions, where specified • MSDS • memos • regulatory and legislative requirements pertaining to the application of texture coat paint • relevant Australian standards • safe work procedures relating to the application of texture coat paint • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • electrical and fire and/or explosion from combustible materials
	  • falling objects
	  • lighting
	  • manual handling

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RANGE STATEMENT

	• power cables, including overhead service trays, cables and conduits • restricted access barriers • solvents, lead, chemicals, fumes/gases • surrounding structures • traffic control • trip hazards • work access platforms • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others, work site visitors and the public • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment:	• include: • brooms • brushes • mixers • roller equipment • sprays • vacuum cleaners • may include: • compressors • hopper guns • hoses and fittings • mobile scaffold • stepladders • trestles and planks.
Quality requirements include:	• internal company quality policy and standards • manufacturer specifications, where specified • relevant regulations, including Australian standards • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • sedimentation control

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RANGE STATEMENT

	• low odour and emissions • vibration • waste management.
Application processes:	• is to conform with AS2311 The Painting of Buildings.

Application of texture coat paint:	• is to be by:
	  • brush
	  • roller
	• may be by:
	  • spray
	  • other application system.

Texture coat paint finishes:	• include high-build (acrylic or styrene/acrylic) coatings • may include proprietary products or lines.
Surface for application of textured paint finishes includes:	• brick and masonry • fibrous cement sheeting • off-form concrete • paper-faced plasterboard • tilt-up concrete slabs.
Paint waste, water and solvents disposal includes:	• use of manual and machine environmentally sustainable cleaning methods • cleaning water re-cycling or professional disposal • solid waste disposal requirements

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPD3024A Apply paint by spray

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to apply paint by spray onto different surfaces to form a protective paint finish.

The unit includes planning and preparation for the work, preparation of materials and application area, setting up and testing of the spray equipment, application of paint and completion of clean-up activities.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to apply paint by spray, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Materials quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Prepare materials and application area.	2.1. Area is set up for application processes to suit spray system being used. 2.2. Adjoining surfaces to application area are protected by masking off or covering prior to application of spray paint. 2.3. Adequate ventilation to application area is provided to maintain a safe environment. 2.4. Measures are taken to ensure application area remains free of dust and foreign matter. 2.5. ***Paint*** is mixed and viscosity adjusted to allow for application process for spray paint finishing materials, in accordance with equipment and manufacturer requirements and plans and specification.
3. Set up and test spray equipment.	3.1. ***Spray equipment***, ***accessories and lines*** for selected ***spray system*** are identified, selected and set up in the operating location in accordance with manufacturer recommendations, plans and specification. 3.2. Fittings are checked for function and security prior to use in accordance with manufacturer recommendations.

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ELEMENT	PERFORMANCE CRITERIA
	3.3. Safety devices are identified and tested, and defects corrected in accordance with standard operational and manufacturer requirements.
4. Apply paint using the spray system.	4.1. Spray equipment is operated to standard operating procedures in accordance with manufacturer recommendations.
	4.2. Paint is applied to surface using correct application technique to achieve an even finish with opacity and sheen level in accordance with job specification.
	4.3. Defects in coating are identified and corrective action is taken to achieve required spray paint finish in accordance with the job specification.
5. Clean up and store equipment.	5.1. Spray gun and associated components and equipment are dismantled, checked, cleaned and maintained in accordance with manufacturer recommendations and operator's manual.
	5.2. Spray paint materials and solvents are stored safely to manufacturer specifications and company procedures.
	5.3. ***Paint waste***, ***water and solvents*** used in cleaning painting equipment are disposed of in an environmentally sustainable manner and in accordance with relevant legislative requirements
	5.4. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand

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REQUIRED SKILLS AND KNOWLEDGE

- follow instructions
- read and interpret:
  - documentation from a variety of sources
  - drawings and specifications
- report faults
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication, such as hand signals

- evaluating own actions and making judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- recognising procedures, following instructions, responding to change and contributing to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- teamwork skills to coordinate own work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- Australian Paint Approval Scheme (APAS) classifications
- compatibility of surface coating to substrates
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally sustainable waste management, including correct disposal of water-based, latex-based and solvent-based paints
- paint types, their uses and limitations
- painting and decorating terminology
- plans, drawings and specifications
- preparatory materials relevant to spray operations
- processes for the calculation of material requirements
- quality requirements
- rules, regulations, Australian standards and codes of practice of spray painting
- solid waste and paint sludge disposal techniques and relevant legislation, including Environmental Protection Authority (EPA) and local Council regulations
- spray equipment types, characteristics, uses and limitations

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REQUIRED SKILLS AND KNOWLEDGE

- techniques for the application of paint by spray
- types of paints, including the characteristics and uses of paint materials with various volatile organic compound (VOCs) levels and alternative and natural paints
- workplace and equipment safety requirements including respiratory protection.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to:
	• locate, interpret and apply relevant information, standards and specifications
	• comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
	• comply with organisational policies and procedures including quality requirements
	• safely and effectively operate and use tools, plant and equipment
	• communicate and work effectively and safely with others
	• apply by spray to specification the following (with finishes being to specification, including in terms of defects, thickness, sheen, opacity, colour and sharpness):
	  • one acrylic and one alkyd or solvent paint system to at least 6 square metres
	  • airless applicant of acrylic paint

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EVIDENCE GUIDE

- HVLP
- application to a door of at least 2 square metres
- dispose of all paint types in an environmentally sustainable way compliant with relevant local legislation and regulations
- clean and store painting equipment using environmentally sustainable methods and work dispose of all paint types in an environmentally sustainable way compliant with relevant local legislation and regulations.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services

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EVIDENCE GUIDE

Training Package

- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

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RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to applying paint by spray
- relevant Australian standards
- safe work procedures relating to undertaking a applying paint by spray
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Planning and preparation include:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- equipment defect identification
- work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
- hazard control
- hazardous materials and substances
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:

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RANGE STATEMENT

- earth leakage boxes
- electrical and fire and/or explosion from combustible materials
- falling objects
- lighting
- manual handling
- power cables, including overhead service trays, cables and conduits
- restricted access barriers
- solvents, lead, chemicals, fumes/gases
- surrounding structures
- traffic control
- trip hazards
- work access platforms
- work site visitors and the public
- working at heights
- working in confined spaces
- working in proximity to others, work site visitors and the public

- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Tools and equipment include:

- brushes
- drop sheets
- masking equipment
- respirators
- sanders
- scaffold, including:
  - planks
  - trestles
  - stepladders
  - aluminium mobile
- spray equipment
- vacuum cleaners.

Quality requirements include:

- internal company quality policy and standards
- manufacturer specifications, where specified
- relevant regulations, including Australian standards

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RANGE STATEMENT

	• workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • low odour and emissions • stormwater protection • waste management.
Paint coatings may include:	• solvent-based (alkyd, urethane, urethane/alkyd, urethane oil or modified alkyd resins) • two pack • water based • water repellents for timber • low odour and low-VOC (Volatile Organic Compound) paint • no-VOC paint • non-toxic paint • alternative and natural paint and paint materials.
Spray equipment, accessories and lines include:	• compressors • diaphragm • hoses • piston airless spray unit (electrical, pneumatic and petrol) • regulators • spray guns • spray tips and filters.

Spray systems:	• include:
	  • airless spray units
	  • conventional spray units
	  • high volume, low pressure (HVLP) spray applications
	• may include electrostatic spray applications.

Paint waste, water and solvents disposal includes:	• use of manual and machine environmentally sustainable cleaning methods • cleaning water re-cycling or professional disposal • solid waste disposal requirements

Unit Sector(s)

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Unit sector Construction

Functional area

Functional area

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CPCCPD3025A Match specified paint colour

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to colour match new and existing painting finishes.

The unit includes planning and preparation for the work, matching of paint colour to a specified sample and completion of clean-up activities.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to match paint, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** are selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Materials quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Match paint colour to specified sample.	2.1. Base colour is identified from analysis of sample. 2.2. ***Paint*** type, tint base and sheen level of ***sample*** are established in accordance with manufacturer recommendations and specifications. 2.3. Colorants are selected as suitable for colour match. 2.4. Colour is mixed and matched against sample and allowed to dry to establish accuracy of colour match. 2.5. Full quantity of paint is mixed and colour match is retested prior to application in accordance with specifications.
3. Clean up.	3.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 3.2. Machinery, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- evaluating own actions and making judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- recognising procedures, following instructions, responding to change and contributing to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- teamwork skills to coordinate own work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- colour principles related to monochromatic, complementary, split complementary, analogous and triadic colours
- colour theory related to primary, secondary, tertiary and intermediate colours
- colours used in heritage painting or restoration
- effect, over time, of light on colours
- factors that affect the apparent colour of paint, including:

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REQUIRED SKILLS AND KNOWLEDGE

- age and deterioration of painted sample if in situ
- colour and opacity of the paint
- colour considerations regarding durability of colours in exterior locations
- colour of drapes and other furnishings
- colour of surface covered by paint
- gloss level and paint type
- lighting conditions
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- painting and decorating terminology
- plans, drawings and specifications
- presentation of paint formulas
- processes for the calculation of material requirements
- quality requirements
- use of the colour wheel
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures including quality requirements • safely and effectively operate and use tools, plant and equipment • communicate and work effectively and safely with others • colour match a minimum of two solvent-based and two latex/acrylic paints to specification.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying

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EVIDENCE GUIDE

	safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

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EVIDENCE GUIDE

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to the colour matching of paint
- relevant Australian standards
- safe work procedures relating to the colour matching of paint
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

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RANGE STATEMENT

Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • electrical and fire and/or explosion from combustible materials
	  • falling objects
	  • lighting
	  • manual handling
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • solvents, lead, chemicals, fumes/gases
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work access platforms
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others, work site visitors and the public
	• use of firefighting equipment
	• use of tools and equipment

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RANGE STATEMENT

	• workplace environmental requirements and safety.

Tools and equipment:	• include:
	  • colorant dispenser
	  • mixing receptacles
	  • paintbrushes
	  • stirring implements
	• may include mechanical paint mixers (shakers).

Quality requirements include:	• internal company quality policy and standards • manufacturer specifications, where specified • relevant regulations, including Australian standards • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • stormwater protection • waste management.
Paints to be matched include:	• latex/acrylics • solvent-based.
Sample includes:	• fan decks • in situ previously painted unit or area • paint manufacturers' colour card.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPD3026A Apply stains and clear timber finishes

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to apply stains and clear timber finishes to different material surfaces, including previously stained or finished timber to form a protective and decorative finish.

The unit includes planning and preparation for the work, preparation of the work area and materials, staining of bare timber, application of clear finishes and completion of clean-up activities.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to apply stains and clear timber finishes, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks, including ***work platforms*** where required are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Materials quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied. 1.8. Stain colour to be applied is matched to previously treated timber or associated area or item.
2. Prepare materials and application area.	2.1. Area is set up for application processes to suit application system being used. 2.2. Adjoining surfaces to application area are protected by masking off or covering, prior to application of stains and finishes. 2.3. Adequate ventilation to application area is provided to maintain a safe environment. 2.4. Measures are taken to ensure application area remains free of dust and foreign matter. 2.5. Existing stained or finished surfaces for application are stripped using appropriate techniques.
3. Stain bare timber surface.	3.1. Stain is selected for type of timber allowing for aesthetics and durability in accordance with manufacturer recommendations and job specifications. 3.2. Stain is prepared to proportions and consistency in accordance with manufacturer recommendations and job specification.

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ELEMENT	PERFORMANCE CRITERIA
	3.3. ***Application*** method for the specified ***surface***, area size and type of finish is selected in accordance with manufacturer recommendations and job specifications.
	3.4. Stain is applied to bare timber surface to specifications and manufacturers' instructions.
	3.5. Wood filler and putty are selected, mixed, colour matched and applied to timber in accordance with job specifications.
4. Apply clear finishes.	4.1. Coats of selected clear ***finish*** are applied to achieve required level of opacity, finish and sheen in accordance with manufacturer recommendations and job specifications.
	4.2. Drying time is allowed between coats in accordance with manufacturer recommendations and job specifications.
	4.3. Clear finish surfaces are cured in accordance with manufacturer recommendations and job specifications.
5. Clean up.	5.1. Unused materials are sealed and stored/stacked in accordance with standard material handling practices and techniques and company requirements.
	5.2. Painting tools and equipment are cleaned with correct solutions and without damage, and stored safely and effectively to manufacturer specifications.
	5.3. ***Paint waste, water and solvents*** used in cleaning painting equipment are disposed of in an environmentally sustainable manner and in accordance with relevant legislative requirements.
	5.4. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

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REQUIRED SKILLS AND KNOWLEDGE

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- evaluating own actions and making judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- recognising procedures, following instructions, responding to change and contributing to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- teamwork skills to coordinate own work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- Australian Paint Approval Scheme (APAS) classifications
- basic softwood and hardwood timber technology
  - conservation
  - conservation areas
- hazards associated with solvents, chemicals and dust
  - heritage listed buildings
- job safety analysis (JSA) and safe work method statements
  - maintenance, renovation and refurbishment
- material safety data sheets (MSDS)
- materials storage and environmentally sustainable waste management, including

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REQUIRED SKILLS AND KNOWLEDGE

correct disposal of water-based, latex-based and solvent-based paints and finishes

- new building (residential, commercial and high rise)

- painting and decorating terminology
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- responsibilities with regard to:
  - restoration
- solid waste and paint sludge disposal techniques and relevant legislation, including Environmental Protection Authority (EPA) and local Council regulations
- surface preparation techniques for clear wood finishing
- testing techniques and support materials
- theoretical principles relating to pigmentation and colouring agents, drying and curing processes and the role of solvents
- types of paints, including the characteristics and uses of paint materials with various volatile organic compound (VOCs) levels and alternative and natural paints
- types, properties, uses and limitations of clear timber finishes and timber stains
- types, uses and limitations of commonly used brushes, rollers and other applicators
- variances in work carried out within sectors of painting and decorating industry for:
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- apply stains and clear timber finishes (with finishes being to specification, including in terms of defects, colour, level of opacity, finish and sheen) which is at a minimum to cover:
  - one oil-based stain product
  - one water and spirit-based timber stain
  - one water-based clear finish
  - one oil-based clear finish
  - grain filler applications
  - putty applications.
- apply at least one stain and one clear finish to two previously treated timber surfaces with each stain and clear finish application to be not less than 2 square metres or two lineal metres in each case

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EVIDENCE GUIDE

- dispose of all paint and finishes in an environmentally sustainable way compliant with relevant local legislation and regulations
- clean and store painting equipment using environmentally sustainable methods and work practices including waste reticulation systems.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and

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EVIDENCE GUIDE

correctly interpret the essential underpinning knowledge required for practical application

- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised

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RANGE STATEMENT

wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to the application of stains and clear timber finishes
- relevant Australian standards
- safe work procedures relating to the application of stains and clear timber finishes
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Planning and preparation include:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- equipment defect identification
- work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
- hazard control
- hazardous materials and substances
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes

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RANGE STATEMENT

- electrical and fire and/or explosion from combustible materials
- falling objects
- lighting
- manual handling
- power cables, including overhead service trays, cables and conduits
- restricted access barriers
- solvents, lead, chemicals, fumes/gases
- surrounding structures
- traffic control
- trip hazards
- work access platforms
- work site visitors and the public
- working at heights
- working in confined spaces
- working in proximity to others, work site visitors and the public

- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Tools and equipment include:

- brushware
- brushware accessories
- buckets
- drop sheets
- duster brushes
- filling knives and blades
- hammers
- hand sanders
- heat guns
- mechanical sanders
- nail punches
- paint pots and buckets
- paint stirrers
- putty knives
- roller accessories
- roller frames
- scrapers
- spray equipment.

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RANGE STATEMENT

Work platforms include:	• stepladders • trestles • planks.
Quality requirements include:	• internal company quality policy and standards • manufacturer specifications, where specified • relevant regulations, including Australian standards • workplace operations and procedures.

Materials:	• include:
	  • grain fillers (water, spirit or oil)
	  • putty
	  • single pack clear finish
	  • timber stains (water, spirit, oil or slightly pigmented varnish/polyurethane)
	• may include:
	  • acrylic clear and two pack epoxy clear, shellac, tinting agents and waxes
	  • clear finishes for timber, including lacquers and two pack polyurethane.

Environmental requirements include:	• clean-up management • dust and noise • low odour and emissions • stormwater protection • waste management.

Application methods:	• include:
	  • brush
	  • paint pad (sponge)
	  • rag
	  • roller
	• may include spray.

Application:	• is to be in accordance with the relevant Australian standard unless this is replaced by other authorised job specifications.

Surfaces to be finished/pre-finished:	• include:
	  • curved
	  • horizontal
	  • inclined
	  • vertical
	• may be all common profiles encompassing:

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RANGE STATEMENT

	• building boards, including particle board • doors • floors • in sound or unsound conditions • medium density fibreboard (MDF) • natural timber products • panelling • ply • previously coated/treated timber surface • stairs.
Finish includes:	• flat • full gloss • satin • semi-gloss.
Paint waste, water and solvents disposal includes:	• use of manual and machine environmentally sustainable cleaning methods • cleaning water re-cycling or professional disposal • solid waste disposal requirements

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPD3027A Apply wallpaper

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to apply wallpaper to walls of different materials to form a protective and decorative finish.

The unit includes planning and preparation for the work, preparation of the surfaces and materials, application of the wallpaper and completion of clean-up activities.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to apply wallpaper, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** are selected to carry out tasks, including ***work platforms*** where required are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Materials quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Prepare surface for wallpaper.	2.1. Condition, suitability and nature of existing substrate and surface material are determined and removal process is selected. 2.2. Hazards are identified and correct procedures used to reduce risk to self and others in accordance with manufacturer recommendations and specifications. 2.3. Surfaces are prepared for wallpapering application by removing existing coating and loose debris. 2.4. Surface defects are repaired and imperfections stopped, filled and sanded to smooth finish ready for wallpapering in accordance with manufacturer recommendations and job specifications.
3. Prepare for the hanging process.	3.1. Final application plan for hanging wallpaper is determined and documented in accordance with manufacturer recommendations and client requirements. 3.2. Selected ***adhesives*** are prepared in accordance with manufacturer recommendations. 3.3. Materials are checked for conformity to dye lot, batch number and other shading requirements in

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ELEMENT	PERFORMANCE CRITERIA
	accordance with manufacturer recommendations and client requirements.
4. Apply wallpaper.	4.1. Size coating is applied to work area in accordance with manufacturer recommendations. 4.2. ***Wallpaper*** is applied to work area ensuring an even surface, seams are butted, paper is plumb and pattern is free of defects. 4.3. Trimming around fittings is completed accurately and with minimal impact on surroundings. 4.4. ***Wallpaper application*** is completed in accordance with manufacturer recommendations and job specifications.
5. Clean up.	5.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 5.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences

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REQUIRED SKILLS AND KNOWLEDGE

- use and interpret non-verbal communication, such as hand signals
- evaluating own actions and making judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- recognising procedures, following instructions, responding to change and contributing to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- teamwork skills to coordinate own work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- common wallpapering defects
- compatibility of preparatory materials and wallpaper
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- painting and decorating terminology
- plans, drawings and specifications
- procedures used to apply straight pattern match, drop pattern match and random match wallpapers
- processes for the calculation of material requirements
- responsibilities with regard to:
  - conservation areas
  - heritage listed buildings
- quality requirements
- surface preparation techniques for the application of wallpaper
- types and properties of wall coverings and their suitability to various substrates
- types, uses and limitations of commonly used adhesives
- wallpaper hanging processes and techniques
- wallpapering tools and equipment, their uses and limitations
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- apply wallpaper to specification for a minimum of 6 square metres on a minimum of three jobs, covering:
  - lining paper, vinyl wallpaper and unpasted wallpaper
  - walls and internal and external corners, reveal, window and arch
  - walls containing power points and switches.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory

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EVIDENCE GUIDE

	or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured

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EVIDENCE GUIDE

learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to the application of wallpaper

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RANGE STATEMENT

	• relevant Australian standards • safe work procedures relating to the application of wallpaper • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • electrical and fire and/or explosion from combustible materials
	  • falling objects
	  • lighting
	  • manual handling
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • solvents, lead, chemicals, fumes/gases
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work access platforms

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RANGE STATEMENT

	• work site visitors and the public • working at heights • working in confined spaces • working in proximity to others, work site visitors and the public • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• applicators • broad knives • filling blades • lay brushes • plumb bobs and string lines • rubber rollers • scissors • scrapers • seam rollers • smoothing blocks • spirit levels • sponges • steam strippers • tape measures • trimming knives and cutters.
Work platforms include:	• mobile scaffold • planks • stepladders • trestles.
Quality requirements include:	• internal company quality policy and standards • manufacturer specifications, where specified • relevant regulations, including Australian standards • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • stormwater protection • waste management.
Adhesives include:	• cellulose • latex • polyvinyl alcohol (PVA)

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RANGE STATEMENT

Wallpaper includes:	• starch • other special adhesive blends. • borders • lining paper • unpasted and ready pasted wallpapers (simplex and duplex) • vinyl wallpaper • washable wallpaper.
Wallpaper applications include those to walls which may be:	• constructed of set plaster • curved • fibre cement products • fibrous plaster • flat • medium density fibre board • plasterboard.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPD3028A Apply decorative paint finishes

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to apply decorative paint finishes to a range of different material surfaces.

The unit includes planning and preparation for the work; preparation of the application area; application of mirror paint finishes, broken colour effects and lines by brush; and completion of clean-up activities.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to apply commonly used decorative paint finishes, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** are selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. ***Materials*** quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Prepare application area.	2.1. Area is set up for application processes to suit surfaces to be painted with ***decorative paint finishes***. 2.2. Adjoining surfaces to application area are protected by masking off or covering prior to application of decorative paint finishing materials. 2.3. Ventilation is provided in application area to maintain safety of self and others. 2.4. Measures are taken to ensure application area is dust free.
3. Apply mirror paint finish.	3.1. Paint viscosity is adjusted to suit climatic conditions and method of application in accordance with manufacturer specifications and/or job specifications for ***mirror finishing***. 3.2. Prime and intermediate coats are applied to specifications, allowed to dry thoroughly and sanded to a smooth, even finish. 3.3. Final coat is applied without imperfections, flowing out to an even, smooth finish in accordance with manufacturer specifications and/or job specifications.
4. Apply broken colour effects.	4.1. Ground coat to specified colour and consistency is applied evenly to prepared surface for ***broken colour***

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ELEMENT	PERFORMANCE CRITERIA
	effects.
	4.2. Scumble glaze is applied to prepared ground and desired broken colour effect is produced to match sample in accordance with manufacturer specifications and/or job specifications.
	4.3. Clear coating is applied to achieve an even finish to specified sheen level in accordance with manufacturer specifications and/or job specifications.
5. Apply modern acrylic finishes	5.1. ***Acrylic finishes*** are applied to achieve an even finish in accordance with manufacturer specifications and/or job specifications
6. Apply lining by brush.	6.1. Lining work is selected and set out to designed effect on prepared surface to specifications.
	6.2. Paint materials, applicators and brushware are identified and selected in accordance with suitability of use for lining application and job specifications.
	6.3. Specified application techniques are applied to produce designed lining work effects and finish in accordance with manufacturer specifications and/or job specifications.
7. Apply basic stencilling	7.1. ***Stencil*** design is selected and laid out onto recommended material.
	7.2. Specified transfer method, is used and design is cut accurately using a 'register' mark.
	7.3. Initial stencil is placed and taped to designed location and paint is applied to produce colour to specifications.
8. Apply basic special finishes	8.1. Special effect materials, applicators and brushware are identified and selected in accordance with suitability of use for application of ***special finishes*** and job specifications.
	8.2. A range of traditional and modern special finishes are applied to produce specified effects and finish in accordance with manufacturer specifications and/or job specifications.
9. Clean up and store equipment.	9.1. Special effect painting equipment and spray painting equipment are dismantled, cleaned, maintained and stored.
	9.2. Waste and unwanted materials are removed and placed into job waste bins or rubbish stockpile in a safe and effective manner in accordance with sound work practices compliant with environmental

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ELEMENT	PERFORMANCE CRITERIA
	requirements. 9.3. Unused materials are sealed and stored/stacked in accordance with standard material handling practices and techniques and company requirements. 9.4. ***Paint waste, water and solvents*** used in cleaning painting equipment are disposed of in an environmentally sustainable manner and in accordance with relevant legislative requirements 9.5. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 9.6. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer specifications and/or standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- evaluating own actions and making judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials

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REQUIRED SKILLS AND KNOWLEDGE

- organisational skills, including the ability to plan and set out work
- recognising procedures, following instructions, responding to change and contributing to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- teamwork skills to coordinate own work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- Australian Paint Approval Scheme (APAS) classifications
- colour fleck materials and application techniques
- compatibility of surface coatings to substrates
- decorative painted finishes technology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally sustainable waste management, including correct disposal of water-based, latex-based and solvent-based paints
- painting and decorating terminology
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- solid waste and paint sludge disposal techniques and relevant legislation, including Environmental Protection Authority (EPA) and local Council regulations
- types of paints, including the characteristics and uses of paint materials with various volatile organic compound (VOCs) levels and alternative and natural paints
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- complete to specification, the following decorative finishes:
  - a mirror finish to a minimum of a door or standard panel
  - a minimum of two broken colour effects on walls or standard panel size surfaces
  - use of lining within a decorative finish
  - a minimum of two (one traditional and one modern) special effects including imitation marbling, imitation wood graining and basic gilding
- dispose of all paint types in an environmentally sustainable way compliant with relevant local legislation and regulations
- clean and store painting equipment using environmentally sustainable methods and

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EVIDENCE GUIDE

	work practices including waste reticulation systems.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able

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EVIDENCE GUIDE

to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

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RANGE STATEMENT

Information includes:	• diagrams or sketches • instructions issued by authorised organisational or external personnel • manufacturer specifications and instructions, where specified • MSDS • memos • regulatory and legislative requirements pertaining to the application of decorative paint finishes • relevant Australian standards • safe work procedures relating to the application of decorative paint finishes • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • electrical and fire and/or explosion from combustible materials
	  • falling objects
	  • lighting

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RANGE STATEMENT

	• manual handling • power cables, including overhead service trays, cables and conduits • restricted access barriers • solvents, lead, chemicals, fumes/gases • surrounding structures • traffic control • trip hazards • work access platforms • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others, work site visitors and the public • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• brushes • compressors • mobile scaffold • planks • rollers • sanders • scrapers • spray equipment • stepladders • trestles • vacuum cleaners.
Materials include:	• clear finishes • fillers • linseed oil • manufacturers' proprietary products • oil-based products • scumbling mediums • stainers • terebine dryers • water-based products.
Quality requirements include:	• internal company quality policy and standards • manufacturer specifications, where specified

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RANGE STATEMENT

	• relevant regulations, including Australian standards • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • low odour and emissions • stormwater protection • waste management.

Decorative paint finishes:	• include:
	  • broken colour effects
	  • lines
	  • mirror finish
	  • gilding
	  • stencilling
	  • basic imitation marbling
	  • basic imitation wood graining.
	• may include:
	  • gilding
	• luminescent finishes.

Mirror finishing:	• is applied by:
	  • brush
	  • brush/roller
	• may be applied by:
	  • spray
	• flood coating.

Broken colour effects:	• are achieved using:
	  • rag rolling
	  • sponging
	  • stippling
	• may use:
	  • bagging
	  • flouncing
	  • dragging
	  • blending
	• highlighting.

Acrylic finishes include but are not limited to:	• suede • metalessence • pearlessence/illuminessence

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RANGE STATEMENT

Stencilling includes the use of:	• lime washes. • cutting boards • cutting knives and scalpels • drawing and tracing materials • stencil brushes • stencil materials.
Special finishes include:	• basic imitation marbling • basic imitation wood graining • basic gilding.
Paint waste, water and solvents disposal includes:	• use of manual and machine environmentally sustainable cleaning methods • cleaning water re-cycling or professional disposal • solid waste disposal requirements

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPD3029A Remove graffiti and apply protective coatings

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to remove graffiti and apply preventative materials to different surfaces to form graffiti-resistant surface systems.

The unit includes planning and preparation for the work, preparation of the work site and materials, removal of graffiti, application of preventative material and completion of clean-up activities.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to remove graffiti and apply protective coatings, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, ***tools and equipment*** are selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Materials quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Prepare site and materials.	2.1. Site area is set up for graffiti removal and preventative application processes to suit surfaces to be treated. 2.2. Adjoining surfaces to application area are protected by masking off or covering prior to application of graffiti preventative coatings. 2.3. Adequate ventilation is provided for application area. 2.4. Stormwater protection systems are installed where appropriate.
3. Remove graffiti.	3.1. Preparation processes are selected to suit substrate surfaces and graffiti circumstances. 3.2. Type of coating previously used to cover graffiti is identified in accordance with current industry standards of practice, manufacturer recommendations and specifications. 3.3. Graffiti removal processes are applied to affected area in accordance with current industry standards of practice, manufacturer recommendations and specifications.
4. Apply preventative	4.1. Substrate surfaces are cleaned and prepared for

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ELEMENT	PERFORMANCE CRITERIA
application material.	preventative application coatings in accordance with current industry standards of practice and manufacturer recommendations. 4.2. Type of ***preventative coating*** to cover specific type of graffiti is identified and prepared in accordance with manufacturer recommendations and job specifications. 4.3. Preventative application coating to cover specific type of graffiti is ***applied*** in accordance with manufacturer recommendations and job specifications.
5. Clean up and store equipment.	5.1. Painting equipment is dismantled, cleaned, maintained and stored in accordance with manufacturer recommendations and standard work practices. 5.2. Unused materials are sealed and stored/stacked in accordance with standard material handling practices and company procedure. 5.3. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 5.4. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:

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REQUIRED SKILLS AND KNOWLEDGE

    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- evaluating own actions and making judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- recognising procedures, following instructions, responding to change and contributing to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- teamwork skills to coordinate own work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- graffiti resistant material technologies and applications
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- painting and decorating terminology
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- surface preparation techniques
- types and properties of commonly used graffiti materials
- types, characteristics, uses and limitations of graffiti removal materials
- types, uses, limitations and operating techniques of graffiti removal equipment
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures including quality requirements • safely and effectively operate and use tools, plant and equipment • communicate and work effectively and safely with others • remove graffiti from two different substrates of at least 1 square metre using two approved cleaning methods • apply a minimum of one sacrificial and one non-sacrificial preventative coating, each to a different substrate of at least 1 square metre.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement

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EVIDENCE GUIDE

- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice,

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EVIDENCE GUIDE

with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

1.1. ***Information*** includes:
- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to the removal of graffiti and application of protective coatings
- relevant Australian standards
- safe work procedures relating to the removal of graffiti and application of protective

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RANGE STATEMENT

	coatings • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
1.2. ***Planning and preparation*** include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

1.3. ***Safety*** (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • electrical and fire and/or explosion from combustible materials
	  • falling objects
	  • lighting
	  • manual handling
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • solvents, lead, chemicals, fumes/gases
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work access platforms
	  • work site visitors and the public
	  • working at heights

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RANGE STATEMENT

	• working in confined spaces • working in proximity to others, work site visitors and the public • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
1.4. ***Tools and equipment*** include:	• airless spray equipment • brushes • mobile scaffold • planks • rollers • scrapers • stepladders • trestles • vacuum cleaners • water blasters.
1.5. ***Quality requirements*** include:	• internal company quality policy and standards • manufacturer specifications, where specified • relevant regulations, including Australian standards • workplace operations and procedures.
1.6. ***Materials*** include:	• solvents • cleaning materials.
1.7. ***Environmental requirements*** include:	• clean-up management • dust and noise • stormwater protection • waste management.

1.8. ***Preventative coatings***:	• include:
	  • sacrificial
	  • non sacrificial
	• may include:
	  • siliconised
	  • other types.

1.9. ***Application***:	• systems include:
	  • brush/roller
	  • spray
	• is to conform with relevant Australian standard.

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Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPD3030B Apply protective paint coating systems

Modification History

Photovoltaic (solar) panels added to range statement
Equivalent to CPCCPD3030A

Unit Descriptor

This unit of competency specifies the outcomes required to apply specialised paint coating systems as a protective measure against atmospheric conditions, sanitation and hygiene risks and the impacts of high traffic areas.
The unit includes planning and preparation for the work, preparation of the work area and materials, application of the coating system and completion of clean-up activities.

Application of the Unit

This unit of competency supports the attainment of the understanding and skills to apply protective coatings, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes.
		1.2	***Safety (OHS)*** requirements are followed in accordance with safety plans and policies.
		1.3	Signage and barricade requirements are identified and implemented.
		1.4	Plant, ***tools and equipment*** are selected to carry out tasks, including ***work platforms*** where required are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement.
		1.5	Materials quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
		1.6	***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
		1.7	***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2	Prepare surfaces for protective coating.	2.1	Suitability of ***surface*** for protective ***paint coating*** is determined in accordance with manufacturer recommendations and job specifications.
		2.2	***Surface preparation method*** is correctly selected in accordance with the environment, finish and substrate

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			requirements.
		2.3	Surface is prepared to manufacturer specifications in compliance with substrate requirements, specifications and relevant standards.
		2.4	Surface imperfections are repaired or stopped, filled and sanded to a smooth finish ready for the protective coating in accordance with manufacturer recommendations and job specifications.
3	Apply protective coating system.	3.1	Job location is checked to ensure provision of adequate ventilation and precautions taken to prevent fire and explosion.
		3.2	***Application*** for ***paint coating*** is selected consistent with the job location, type of paint, type and condition of surface and climatic conditions.
		3.3	Protective coating system is applied and finished in accordance with job/manufacturer specifications and relevant standards.
		3.4	***Measurement and dry and wet testing*** are carried out in accordance with manufacturer specifications and relevant standards.
4	Clean up.	4.1	Waste and unwanted materials are removed and placed into job waste bins or rubbish stockpile in accordance with sound work practices and compliance with the environmental requirements.
		4.2	Painting tools, equipment and plant are cleaned with correct solutions and without damage, and stored safely and effectively to manufacturer specifications.
		4.3	Unused materials are sealed and stored/stacked in accordance with standard material handling practices and techniques and company requirements.
		4.4	***Paint waste, water and solvents*** used in cleaning painting equipment are disposed of in an environmentally sustainable manner and in accordance with relevant legislative requirements.
		4.5	Work area is cleared and materials disposed of or recycled in a manner to avoid spontaneous combustion

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and in accordance with legislation, regulations, codes of practice and job specification.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- evaluating own actions and making judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- recognising procedures, following instructions, responding to change and contributing to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- teamwork skills to coordinate own work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- Australian Paint Approval Scheme (APAS) classifications
- hazards associated with solvent vapour, chemical fumes, gases, harmful dusts, metal chips, abrasive grit and asbestos fibres

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- impact of atmospheric conditions and high traffic on new and existing structures and coatings
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally sustainable waste management, including correct disposal of water-based, latex-based and solvent-based paints
- painting and decorating terminology
- plans, drawings and specifications
- processes for the calculation of material requirements
- protective paint coating application equipment and techniques and their uses and limitations
- protective surface coating technology
- quality requirements
- solid waste and paint sludge disposal techniques and relevant legislation, including Environmental Protection Authority (EPA) and local Council regulations
- types of commonly used protective paint coatings, their uses and limitations
- types of paints, including the characteristics and uses of paint materials with various volatile organic compound (VOCs) levels and alternative and natural paints
- workplace and equipment safety requirements.

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures

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including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- prepare an application of a minimum of three different protective paint coating systems of at least 1 square metre to specification
- dispose of all paint types in an environmentally sustainable way compliant with relevant local legislation and regulations
- clean and store painting equipment using environmentally sustainable methods and work practices including waste reticulation systems.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training

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Package

- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

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Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to the application of protective paint coating systems
- relevant Australian standards
- safe work procedures relating to the application of protective paint coating systems
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Planning and preparation include:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- equipment defect identification
- work site inspection.

Safety (OHS) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
- hazard control
- hazardous materials and substances
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes
  - electrical and fire and/or explosion from combustible materials

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- falling objects
- lighting
- manual handling
- photovoltaic (solar) panels
- power cables, including overhead service trays, cables and conduits
- restricted access barriers
- solvents, lead, chemicals, fumes/gases
- surrounding structures
- traffic control
- trip hazards
- work access platforms
- work site visitors and the public
- working at heights
- working in confined spaces
- working in proximity to others, work site visitors and the public
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Tools and equipment include:

- brushware
- brushware accessories
- buckets
- covers
- drop sheets
- duster brushes
- hand and mechanical wire brushes
- hand sanders
- high pressure water blasters
- mechanical grinders
- mechanical sanders
- paint pots and buckets
- paint stirrers
- rags
- roller accessories
- roller frames
- scrapers
- spray equipment
- wet and dry film thickness gauges.

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Work platforms include:

- aluminium mobile scaffolds
- elevated work platforms
- hop ups
- in situ scaffold erected by qualified personnel
- ladders
- planks
- scissor lifts
- stepladders
- trestles.

Quality requirements include:

- internal company quality policy and standards
- manufacturer specifications, where specified
- relevant regulations, including Australian standards
- workplace operations and procedures.

Materials include:

- cleaning aids
- cleaning chemicals
- solvents.

Environmental requirements include:

- chemical fumes
- clean-up management
- dust and noise
- low odour and emissions
- stormwater protection
- waste management.

Surface to be prepared and coated:

- may be:
  - new
  - previously coated
- includes:
  - concrete
  - fibreglass
  - metallic (iron, steel, ferrous and non-ferrous metals)
  - plastics, including polyvinyl chloride (PVC).

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Paint coating includes:	• polyurethane primer (two pack) • epoxy primer (two pack) • high build epoxy • high build chlorinated rubber.
Surface preparation method includes:	• abrasive blasting • chemical stripping • grinding • heat gun • sanding • scraping (mechanical and hand) • washing down using sugar soap • water blasting.
Application:	• is to comply with relevant Australian standards.
Paint coating includes:	• corrosion control • decoration • hygiene and sanitation protection • trafficable areas.
Measurement and dry and wet testing techniques:	• are those required to confirm that wet film meets specifications.
Paint waste, water and solvents disposal includes:	• use of manual and machine environmentally sustainable cleaning methods • cleaning water re-cycling or professional disposal • solid waste disposal requirements

Unit Sector(s)

Functional area

Unit sector Construction

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Custom Content Section

Not applicable.

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CPCCPD3031A Implement safe lead paint and asbestos work practices in the painting industry

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to treat lead paint hazards, including removal of lead-based paints from surfaces, encapsulation and the control of associated hazards.

The unit includes planning and preparation for the work, definition and preparation of the work area, removal of contaminated material, encapsulation of contaminated material and completion of clean-up activities.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to treat lead paint hazards, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Circumstances in which lead-based paints may be encountered are determined. 1.2. Location of lead based paint to be treated is determined from plans/specifications. 1.3. ***Testing*** is undertaken for presence of lead or asbestos using approved testing methods. 1.4. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.5. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.6. Signage and barricade requirements are identified and implemented. 1.7. ***Tools and equipment*** are selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.8. Materials quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.9. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.10. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Define and prepare work area.	2.1. Options for the management and ***treatment*** of pre-existing lead-based paints in buildings are considered and determined in accordance with regulatory requirements. 2.2. A safe working area is maintained around lead-based paint locations using temporary control measures, barriers and signage. 2.3. Plant, tools and equipment are positioned to suit job requirements.
3. Remove contaminated materials.	3.1. Appropriate ***removal processes*** are determined to suit job requirements. 3.2. Contamination area is quarantined and people at risk are protected in accordance with regulatory requirements. 3.3. Furnishings, other surfaces, surrounding ground

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ELEMENT	PERFORMANCE CRITERIA
	areas, drinking vessels, water storage and foodstuffs are protected and all doors and windows sealed where appropriate.
	3.4. ***Debris and waste*** management procedures are identified for lead contamination from flake, chalk and dust.
	3.5. Removal processes are applied and contaminated materials are containerised for movement.
	3.6. Substrates are repaired, restored and prepared for subsequent coatings.
4. Manage contaminated materials.	4.1. Stabilisation method is determined to make the building lead safe by applying temporary control measures.
	4.2. Appropriate methods for the containment of existing surfaces are determined or confirmed in accordance with regulatory requirements.
	4.3. Over painting is conducted using oil-based paints by applying a high quality undercoat sealer and two coats of quality topcoats.
	4.4. Specialised liquid encapsulant is applied in accordance with manufacturer specifications.
	4.5. Contaminated surface is enclosed using overlaying materials such as plasterboard or weatherboard and applying warning notices of the latent lead hazard.
5. Clean up.	5.1. Work area is cleared and materials disposed of or recycled in accordance with legislation, regulations, codes of practice and job specification.
	5.2. Waste and unwanted materials are removed and placed into containment vessels for disposal in accordance with authorised systems and relevant standards.
	5.3. Surface and soil tests are conducted to verify that no contamination has taken place and building is safe for occupation.
	5.4. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- evaluating own actions and making judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- recognising procedures, following instructions, responding to change and contributing to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- teamwork skills to coordinate own work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- agents and techniques available for encapsulation, their uses and limitations
- agents available for chemical stripping treatments, their uses and limitations
- containment techniques and processes for lead-based paint flakes, dust and chalk
- health risks associated with lead and lead-based paint products
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management

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REQUIRED SKILLS AND KNOWLEDGE

- painting and decorating terminology
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- sanding equipment and techniques
- types and specifications of lead-based paints and the manufacturer recommendations for removal
- workplace and equipment safety requirements.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures including quality requirements • safely and effectively operate and use tools, plant and equipment • communicate and work effectively and safely with others • apply treatments of at least 6 square metres for a minimum of two different lead paint hazards (where the processes and outcomes are to be in

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EVIDENCE GUIDE

	line with current regulations and relevant Australian standards), including: • a chemical stripping treatment • paint systems to contain lead or asbestos.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application

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EVIDENCE GUIDE

- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work

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RANGE STATEMENT

situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Testing:	• includes lead test kits • may include x-ray fluorescence equipment and laboratory testing of field samples.
Information includes:	• diagrams or sketches • instructions issued by authorised organisational or external personnel • manufacturer specifications and instructions, where specified • MSDS • memos • regulatory and legislative requirements pertaining to the treatment of lead paint hazards • relevant Australian standards • safe work procedures relating to the treatment of lead paint hazards • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.
Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation • handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor • hazard control • hazardous materials and substances • organisational first aid • PPE prescribed under legislation, regulations and workplace policies and practices • safe operating procedures, including the conduct of operational risk assessment and treatments associated with:

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RANGE STATEMENT

- earth leakage boxes
- electrical and fire and/or explosion from combustible materials
- falling objects
- lighting
- manual handling
- power cables, including overhead service trays, cables and conduits
- restricted access barriers
- solvents, lead, chemicals, fumes/gases
- surrounding structures
- traffic control
- trip hazards
- work access platforms
- work site visitors and the public
- working at heights
- working in confined spaces
- working in proximity to others, work site visitors and the public

- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Tools and equipment:

- include:
  - chemical strippers (caustic based, flammable and methylene chloride)
  - containment receptacles (heavy duty)
  - disposable heavy duty plastic
  - disposable personal boot covers and coveralls
  - high efficiency particulate accumulator (HEPA) filtered vacuum cleaner
  - HEPA filtered sanders
  - measuring tapes and rules
  - respirators (maintained to AS1716)
- may include:
  - heat guns
  - masking tape
  - shovels

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RANGE STATEMENT

	• wet mops • wheelbarrows.
Quality requirements include:	• internal company quality policy and standards • manufacturer specifications, where specified • relevant regulations, including Australian standards • workplace operations and procedures.
Materials include:	• solvents • approved cleaning materials.
Environmental requirements include:	• clean-up management • dust and noise • lead contamination • stormwater protection • waste management.
Treatment includes:	• encapsulation • stripping and removal.
Removal processes include:	• chemical stripping • heat gun • sanders • scraper • use of HEPA vacuum • wet sanding • wet scraping.
Debris and waste include:	• cardboard • empty containers • other receptacles • paint chalk • paint dust • paint flakes • paper • plastic sheeting • protective clothing • soil contaminants • waste materials.

Unit Sector(s)

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Unit sector Construction

Functional area

Functional area

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CPCCPD3032A Apply advanced wallpaper techniques

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to apply wallpaper and specialty materials to walls and ceilings to form a protective and decorative finish.

The unit includes planning and preparation for the work, preparation of the surfaces and materials, application of the wallpaper and specialty materials, and completion of clean-up activities.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to apply advanced wallpaper techniques, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** are selected to carry out tasks, including ***work platforms*** where required are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Prepare surface for wallpaper.	2.1. Condition, suitability and nature of existing substrate and surface material are determined and removal process is selected. 2.2. Hazards are identified and correct procedures used to reduce risk to self and others in accordance with manufacturer recommendations and specifications. 2.3. Surfaces are prepared for wallpapering application by removing existing coating and loose debris. 2.4. Surface defects are repaired and imperfections stopped, filled and sanded to smooth finish ready for wallpapering in accordance with manufacturer recommendations and job specifications.
3. Prepare for the hanging process.	3.1. Final application plan for hanging of wallpaper and specialty material is determined and documented in accordance with manufacturer recommendations and with client requirements. 3.2. Selected ***adhesives*** are prepared in accordance with manufacturer recommendations. 3.3. Materials are checked for conformity to dye lot, batch number and other shading requirements in

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ELEMENT	PERFORMANCE CRITERIA
	accordance with manufacturer recommendations and client requirements.
4. Apply wallpaper.	4.1. Size coating is applied to work area in accordance with manufacturer recommendations. 4.2. ***Wallpaper and specialty materials*** are applied to work area ensuring an even surface, seams are butted, paper is plumb and pattern is free of defects. 4.3. Trimming around fittings is completed accurately and with minimal impact on surroundings. 4.4. ***Application*** of ***wallpaper and specialty material*** is completed in accordance with manufacturer recommendations and job specifications.
	5.
6. Clean up.	6.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 6.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults

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REQUIRED SKILLS AND KNOWLEDGE

- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication, such as hand signals

- evaluating own actions and making judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- recognising procedures, following instructions, responding to change and contributing to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- teamwork skills to coordinate own work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- common wallpapering defects
- compatibility of preparatory materials and wallpaper
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- painting and decorating terminology
- plans, drawings and specifications
- procedures used to apply straight pattern match, drop pattern match and random match wallpapers
- processes for the calculation of material requirements
- responsibilities with regard to:
  - conservation areas
  - heritage listed buildings
- quality requirements
- surface preparation techniques for the application of wallpaper
- types and properties of wall coverings and their suitability to various substrates
- types, uses and limitations of commonly used adhesives
- wallpaper hanging processes and techniques
- wallpapering tools and equipment, their uses and limitations
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- apply specialty wallpaper to specification on a minimum of two jobs for at least 6 square metres covering one anaglypta and one other with surfaces containing power points, vents and switches.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the

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EVIDENCE GUIDE

mandatory task requirements

- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at

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EVIDENCE GUIDE

the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to the application of advanced wallpaper techniques
- relevant Australian standards
- safe work procedures relating to the application of advanced wallpaper techniques

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RANGE STATEMENT

	• signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • electrical and fire and/or explosion from combustible materials
	  • falling objects
	  • lighting
	  • manual handling
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • solvents, lead, chemicals, fumes/gases
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work access platforms
	  • work site visitors and the public
	  • working at heights

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RANGE STATEMENT

	• working in confined spaces • working in proximity to others, work site visitors and the public • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• broad knives • filling blades • lay brushes • plastic applicators • plumb bobs and string lines • rubber rollers • scissors • scrapers • seam rollers • smoothing blocks • spirit levels • sponges • steam strippers • tape measures • trimming knives and cutters.
Work platforms include:	• mobile scaffold • stepladders • trestles and planks.
Quality requirements include:	• internal company quality policy and standards • manufacturer specifications, where specified • relevant regulations, including Australian standards • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • stormwater protection • waste management.
Adhesives include:	• cellulose • latex • polyvinyl alcohol (PVA) • starch • other special adhesive blends.
Wallpaper and speciality	• anaglypta

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RANGE STATEMENT

materials include:	• flock • frontrunner • linen backed vinyl • lyncrusta • metallic foils • photo murals • suede grass weaves • other commercial grade materials.

Applications include those to walls and ceilings, which may be:	• constructed of:
	  • set plaster
	  • plasterboard
	  • fibrous plaster
	  • medium density fibre board
	  • fibre cement products
	• flat or curved.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPD3033A Apply intumescent coatings

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to apply intumescent coatings to a range of different material surfaces.

The unit includes planning and preparation for the work, preparation of the application area, application of the specialist coatings and completion of clean-up activities.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to apply intumescent coatings to building surfaces in a range of construction projects, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** are selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. ***Materials*** quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Prepare application area.	2.1. Area is set up for application processes to suit surfaces to be painted. 2.2. Adjoining surfaces to application area are protected by masking off or covering prior to application of decorative paint finishing materials. 2.3. Ventilation is provided in application area to maintain safety of self and others. 2.4. Measures are taken to ensure application area is dust free. 2.5. Surface to be coated is checked to ensure sufficient clearance is available for the expansion of the coating in the case of a fire.
3. Apply intumescent coatings to timber.	3.1. Surface is completely stripped of any pre-existing finish to prepare for application of water-based intumescent coating suitable for timber. 3.2. Suitable priming coat is applied to ensure coating adhesion. 3.3. ***Intumescent coating*** is applied by brush, roller or airless spray, ensuring temperature and humidity requirements for application are maintained.

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ELEMENT	PERFORMANCE CRITERIA
	3.4. Top/finish coat is applied to protect the finish against abrasion and humidity.
4. Apply intumescent coatings to structural metal.	4.1. Metal surface is blasted or wire-brushed to prepare for intumescent coating for ***structural metal***. 4.2. Galvanised steel is de-greased before application of coating. 4.3. Suitable priming coat is applied if metal is not already primed to ensure coating adhesion. 4.4. Intumescent coating is applied by brush, roller or airless spray ensuring temperature and humidity requirements for application are maintained. 4.5. Required film thickness is measured using appropriate wet film ***thickness measuring gauges***. 4.6. Top/finish coat is applied to protect the finish against abrasion and humidity.
5. Clean up and store equipment.	5.1. Painting equipment and spray painting equipment are dismantled, cleaned, maintained and stored. 5.2. Waste and unwanted materials are removed and placed into job waste bins or rubbish stockpile in a safe and effective manner in accordance with sound work practices compliant with environmental requirements. 5.3. Unused materials are sealed and stored/stacked in accordance with standard material handling practices and techniques and company requirements. 5.4. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 5.5. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer specifications and/or standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

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REQUIRED SKILLS AND KNOWLEDGE

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- evaluating own actions and making judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- recognising procedures, following instructions, responding to change and contributing to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- teamwork skills to coordinate own work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- chemical properties of the coating carbon supplier; acid source and expanding agent
- coating requirements for structural metal work, including coating performance differences between hollow and concrete filled structures
- coating requirements for timber
- compatibility of coatings to substrates
- fire resistance level (FRL) rating of intumescent coatings for a range of construction materials
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management

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REQUIRED SKILLS AND KNOWLEDGE

- painting and decorating terminology
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- volume solids behaviour and impact on intumescent coatings performance.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- complete to specification, ensuring correct film thickness, surface preparation and finishing techniques, the following intumescent coating applications:
  - a minimum of one application on a timber surface
  - a minimum of one application on a structural steel surface.

Context of, and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

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EVIDENCE GUIDE

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected

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EVIDENCE GUIDE

must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- organisation work specifications and requirements
- regulatory and legislative requirements

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RANGE STATEMENT

	pertaining to the application of intumescent coatings • relevant Australian standards • safe work procedures relating to the application of intumescent coatings • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • electrical and fire and/or explosion from combustible materials
	  • falling objects
	  • lighting
	  • manual handling
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • solvents, lead, chemicals, fumes/gases
	  • surrounding structures
	  • traffic control

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RANGE STATEMENT

	• trip hazards • work access platforms • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others, work site visitors and the public • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• brushes • compressors • mobile scaffold • planks • rollers • sanders • scrapers • spray equipment • stepladders • trestles • vacuum cleaners.

Materials:	• include:
	  • primers
	  • water-based intumescent coatings
	  • solvent-based intumescent coatings
	  • suitable clear finishes for protection of the coating
	• may include manufacturers' proprietary products.

Quality requirements include:	• internal company quality policy and standards • manufacturer specifications, where specified • relevant regulations, including Australian standards • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • stormwater protection • waste management.

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RANGE STATEMENT

Intumescent coatings:	• include:
	  • surface coatings that in a fire situation undergo a chemical reaction with the increase in temperature, so the intumescent coating expands to many times its original thickness; the coating should provide an insulating foam-like coating or 'char' that protects the substrate
	  • water or solvent-based, depending on the humidity requirements and job site environment
	• may be applied by:
	  • brush
	  • roller or airless spray equipment
	• must meet:
	  • fire resistance level (FRL) requirements for the material it is applied to and the structure being coated.

Structural metal:	• includes:
	  • beams
	  • columns
	• may be:
	  • concrete filled
	  • hollow.

Thickness measuring gauges:	• measure film thicknesses from 0.03mm to 13mm • can be hand held.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCPD3034A Apply advanced decorative paint finishes

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to apply decorative paint finishes to a range of different material surfaces.

The unit includes planning and preparation for the work, preparation of the application area, application of imitation marble effects and imitation wood grain effects, application of stencils and completion of clean-up activities.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to apply advanced decorative paint finishes, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** are selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. ***Materials*** quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Prepare application area.	2.1. Area is set up for application processes to suit surfaces to be painted. 2.2. Adjoining surfaces to application area are protected by masking off or covering prior to application of decorative paint finishing materials. 2.3. Ventilation is provided in application area to maintain safety of self and others. 2.4. Measures are taken to ensure application area is dust free.
3. Produce imitation marble effects.	3.1. Ground coat of specified colour and consistency is applied evenly to prepared surface for both traditional and modern ***imitation granite and lapis effects***. 3.2. Marbling medium is mixed to designed proportions and colour and correctly applied to produce veins and markings as per sample in accordance with manufacturer specifications and job specifications. 3.3. Clear coating is applied to achieve an even finish to specified sheen level in accordance with manufacturer specifications and job specifications.

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ELEMENT	PERFORMANCE CRITERIA
4. Produce imitation wood grain effects.	4.1. Ground coat of specified colour and consistency is applied evenly to prepared surface for traditional ***complex imitation wood grain effects including inlays***. 4.2. Wood graining medium is mixed to designed proportions and colour and correctly applied to produce grain markings as per sample and in accordance with manufacturer specifications and job specifications. 4.3. Specific highlights are added to match sample of decorative paint finishing materials in accordance with manufacturer specifications and job specifications. 4.4. Clear coating is applied to achieve an even finish to specified sheen level in accordance with manufacturer specifications and job specifications.
5. Apply advanced stencils.	5.1. ***Stencil*** design is selected and laid out onto recommended material. 5.2. Specified multi-layering transfer method is used and design is cut accurately for multiple colours using a 'register' mark. 5.3. Initial stencil is placed and taped to designed location and paint is applied to produce first colour to specifications. 5.4. Subsequent stencils and overlays are located accurately to pattern with each separate colour applied to specifications to produce designed finish in accordance with manufacturer specifications and job specifications.
6. Apply advanced lining and special finishes and techniques.	6.1. Complex pattern lining and textures, including Gris Lais are applied to appropriate surfaces for decorative purposes as specified 6.2. Gold leaf and other metallic finishes such as aluminium and bronze are applied to complex surfaces for decorative purposes. 6.3. Gilding and gilding powder in mediums are applied to selected surfaces. 6.4. Finishing techniques are applied, including waxes and other suitable finishes. 6.5. Trowelled decorative finishes, including Stucco Venezia are applied using a range of tools and techniques
7. Create large scale	7.1. Ground coat of specified colour and consistency is

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ELEMENT	PERFORMANCE CRITERIA
decorative projects	applied evenly to prepared surface for traditional application of large decorative effects 7.2. Murals and trompe l'eoi projects are completed to specification.
8. Clean up and store equipment.	8.1. Special effect painting equipment and spray painting equipment are dismantled, cleaned, maintained and stored. 8.2. Waste and unwanted materials are removed and placed into job waste bins or rubbish stockpile in a safe and effective manner in accordance with sound work practices compliant with environmental requirements. 8.3. Unused materials are sealed and stored/stacked in accordance with standard material handling practices and techniques and company requirements. 8.4. ***Paint waste, water and solvents*** used in cleaning painting equipment are disposed of in an environmentally sustainable manner and in accordance with relevant legislative requirements. 8.5. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 8.6. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer specifications and/or standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions

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REQUIRED SKILLS AND KNOWLEDGE

- read and interpret:
  - documentation from a variety of sources
  - drawings and specifications
- report faults
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication, such as hand signals
- evaluating own actions and making judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- recognising procedures, following instructions, responding to change and contributing to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- teamwork skills to coordinate own work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- Australian Paint Approval Scheme (APAS) classifications
- compatibility of surface coatings to substrates
- decorative painted finishes technology
- gilding materials and application techniques
- imitation marble materials and application techniques
- imitation wood grain materials and application techniques
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally sustainable waste management, including correct disposal of water-based, latex-based and solvent-based paints painting and decorating terminology
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- solid waste and paint sludge disposal techniques and relevant legislation, including Environmental Protection Authority (EPA) and local Council regulations
- stencilling materials and application techniques.
- types of paints, including the characteristics and uses of paint materials with

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REQUIRED SKILLS AND KNOWLEDGE

various volatile organic compound (VOCs) levels and alternative and natural paints

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- complete to specification the following decorative finishes:
  - a minimum of one marble graining effect on a standard panel size surface
  - a minimum of one wood graining effect on a standard panel size surface
  - design and cutting of a multi-plate stencil and at least two applications of the stencil
- dispose of all paint types in an environmentally sustainable way compliant with relevant local legislation and regulations
- clean and store painting equipment using environmentally sustainable methods and work practices including waste reticulation systems.

Context of and specific resources

This competency is to be assessed using standard and authorised work practices, safety requirements

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EVIDENCE GUIDE

for assessment

and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

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EVIDENCE GUIDE

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions,

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RANGE STATEMENT

	where specified • MSDS • memos • regulatory and legislative requirements pertaining to the application of advanced decorative paint finishes • relevant Australian standards • safe work procedures relating to the application of advanced decorative paint finishes • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • electrical and fire and/or explosion from combustible materials
	  • falling objects
	  • lighting
	  • manual handling
	  • power cables, including overhead service trays, cables and conduits

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RANGE STATEMENT

	• restricted access barriers • solvents, lead, chemicals, fumes/gases • surrounding structures • traffic control • trip hazards • work access platforms • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others, work site visitors and the public • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• brushes • compressors • planks • rollers • sanders • scrapers • spray equipment • stepladders • trestles • vacuum cleaners • mobile scaffold.
Materials include:	• clear finishes • fillers • linseed oil • manufacturers' proprietary products • oil-based products • scumbling mediums • stainers • terebine dryers • water-based products.
Quality requirements include:	• internal company quality policy and standards • manufacturer specifications, where specified • relevant regulations, including Australian standards • workplace operations and procedures.

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RANGE STATEMENT

Environmental requirements include:	• clean-up management • dust and noise • low odour and emissions • stormwater protection • waste management.
Imitation granite and lapis and complex wood graining effects may be achieved using:	• brush-grainer • chamois • check roller • crayons • cutters • feathers • fitches • floggers • heart grain simulator • mottlers • over-grainers • pencils • rubber combs • softeners • sponges • steel combs • stippling brushes • veining horn.
Stencilling includes the use of:	• cutting boards • cutting knives and scalpels • drawing and tracing materials • stencil brushes • stencil materials.
Paint waste, water and solvents disposal includes:	• use of manual and machine environmentally sustainable cleaning methods • cleaning water re-cycling or professional disposal • solid waste disposal requirements

Unit Sector(s)

Unit sector Construction

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Functional area

Functional area

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CPCCRI3001A Operate personnel and materials hoists

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to operate personnel and materials hoists for moving people and equipment to various heights in a multi-storey structure.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to safely and efficiently use hoists capable of moving personnel and materials.

It includes conducting pre-operational checks, operation, shut down and post-operational checks of hoist equipment while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant information, confirmed and applied in ***planning*** the work activities. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Types of hoist*** and ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and quality requirements including appropriate ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations and applied.
2. Conduct daily safety check.	2.1. Hoisting details for the day are identified from proposed work schedule, and other relevant ***information*** and hoist work program is developed. 2.2. Signalling system is confirmed with associated site personnel. 2.3. Weather conditions for safe hoist operation are assessed. 2.4. ***Personnel and materials hoist equipment*** and site are checked for damage, structural weakness or interference. 2.5. Mechanical, electrical and safety functions are checked in accordance with operator's manual and checklist. 2.6. Test run is conducted without a load through the full height of the hoist's travel, checking the operation and security of the mast and wall bolting. 2.7. Braking system is checked and tested. 2.8. ***Safety systems*** are checked and challenged.

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ELEMENT	PERFORMANCE CRITERIA
3. Record results.	3.1. Results of checks and tests are recorded in hoist book to requirement of regulatory authority.
	3.2. Faults are reported in accordance with company policy.
4. Operate hoist.	4.1. Loads are checked for conformity to safe load capacity of hoist.
	4.2. Hoist is safely operated to requirements of operator's manual and state or territory regulatory authority.
	4.3. Hoist is shut down, rendered safe and secured at end of work period in accordance with operator's manual.
	4.4. Post-operational checks are conducted and recorded.
5. Clean up.	5.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	5.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.
	5.3. ***Work completion details*** and procedures are applied and relevant personnel notified that work is finished.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - follow instructions
  - notify completion of work
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences

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REQUIRED SKILLS AND KNOWLEDGE

- written skills to record results of checks and tests and relevant work completion procedures
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply calculations, including load mass requirements
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- designs and functions of hoisting equipment
- emergency procedures (hoist specific)
- fault finding and identification
- general construction terminology
- hoist operation techniques
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- personnel and materials hoist equipment
- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations
- processes for the calculation of load mass requirements
- quality requirements
- relevant Acts, regulations and codes of practice
- signalling methods and communications
- working at heights
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools, plant and equipment • communicate and work effectively and safely with others • complete pre-operational check, raise and lower to four limits including a top and bottom, conduct manual lowering between floors, shut down and carry out post-operational checks, finalise logbook, all to manufacturer specifications and complying with OHS legislation.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include:

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EVIDENCE GUIDE

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and

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EVIDENCE GUIDE

separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Planning includes:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- equipment defect identification
- work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor

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RANGE STATEMENT

	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Types of hoist include:	• bucket • cantilevered • car • materials • multiple winch and tower • personnel and materials • platform.
Tools and equipment include:	• associated equipment • personnel and materials hoists.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • vibration

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RANGE STATEMENT

	• waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.
Information includes:	• diagrams or sketches • instructions issued by authorised organisational or external personnel • manufacturer specifications and instructions, where specified • MSDS • memos • regulatory and legislative requirements pertaining to operating personnel and materials hoists • relevant Australian standards • safe work procedures relating to operating personnel and materials hoists • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Personnel and materials hoist equipment include:	• rack and pinion • self-climbing • super hoist • winch operated.
Safety systems include:	• anemometer • emergency brakes • limit switches • manual lowering systems.
Work completion details include:	• check sheets • equipment defect records • job cards • JSAs • plant and maintenance records • safe work method statements.

Unit Sector(s)

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Unit sector Construction

Functional area

Functional area

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CPCCRI3012A Perform basic rigging

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to erect or install permanent steel structures, dismantle structural steel and move or locate plant and equipment using a range of basic rigging and dogging techniques. It includes load distribution and calculation.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to perform rigging duties for erection and installation of steel structures and move plant and equipment, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCDO3011A	Perform dogging
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained for relevant ***information***, confirmed and applied for ***scope of work***.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement.
	1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
	1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations and applied.
2. Select equipment.	2.1. Resources, materials and equipment are selected and inspected for compliance with job specifications.
	2.2. Lifting equipment is inspected according to manufacturer specifications.
	2.3. Lifting equipment identified as inconsistent with manufacturer specifications is labelled, rejected and disposed of to prevent its use in any circumstance.
3. Connect equipment.	3.1. Loads and slings are slung to protect the load and associated equipment.
	3.2. Whole or part loads are secured to prevent uncontrolled movement.
	3.3. Slings, or parts of slings, are attached to the load and positioned to ensure safe movement.
	3.4. Slings, or parts of slings, are attached to hook while the hoist wire is vertical.
	3.5. Tag lines are attached to the load where specified.
	3.6. Test lifts are performed to ensure safe and secure movement of the load where specified.

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ELEMENT	PERFORMANCE CRITERIA
4. Move and position loads.	4.1. Load destination is determined and landing area prepared to accept the load. 4.2. Lifting or pulling device is assembled and erected where specified. 4.3. Load is safely moved to required destination and secured in position to client specifications or job requirements. 4.4. Standard communication signals are used to coordinate safe movement of the load.
5. Remove rigging equipment.	5.1. Lifting/moving equipment and packing are dismantled, lowered and inspected for wear. 5.2. Logbook and site records are completed to company requirements.
6. Clean up.	6.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 6.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices. 6.3. Work completion procedures are applied and relevant personnel notified that work is finished.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - follow instructions
  - notify completion of work
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications

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REQUIRED SKILLS AND KNOWLEDGE

- report faults
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication, such as hand signals
- written skills to complete logbooks, site records and relevant work completion procedures

- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- basic rigging equipment and techniques
- crane operations and limitations
- designs and functions of lifting equipment
- general construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations
- processes for the calculation of material requirements
- relevant Acts, regulations and codes of practice
- signalling methods and communications
- workplace and equipment safety requirements.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the

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EVIDENCE GUIDE

Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to:
	• locate, interpret and apply of relevant information, standards and specifications
	• comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
	• comply with organisational policies and procedures, including quality requirements
	• safely and effectively use tools, plant and equipment
	• communicate and work effectively and safely with others
	• complete one of the following:
	  • install and use a fall arrest system to sling, receive, place and brace a minimum 16 square metre module of structural steel in the correct sequence a minimum of 5 metres high
	  • set up, place, install and brace perimeter safety screen and jump for two floors and a loading bay
	  • skid, locate and install heavy industrial equipment using winches and creeper skids for at least one tonne of plant.

Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements.

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EVIDENCE GUIDE

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances

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assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to performing basic rigging
- relevant Australian standards
- safe work procedures relating to performing

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RANGE STATEMENT

	basic rigging • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Scope of work:	• planning and preparation includes work site inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements • calculations include load charts, fleet angles, diverter sheaves, lead loads, head loads, load angle factors, multiple fall, load share, pre-cast compliance charts and safe working loads • sling types include chain, flexible steel wire rope, and natural or synthetic fibre • load slinging methods are to include straight sling, adjustable sling, reeved sling and inclined sling • lifting devices include shackles, turn buckles, jacks, chain winches, hand operated creeper winches, chain blocks, pulley blocks, come alongs, air winches, trolleys, eye bolts, rigging screws, lifting lugs, lifting clutches and snatch blocks • types of cranes include fixed cranes, tower cranes, hydraulic mobile cranes, lattice boom mobile cranes, slewing cranes, non-slewing cranes and gantry cranes.
Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation • handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor • hazard control • hazardous materials and substances, including cement and curing agents • organisational first aid • PPE prescribed under legislation, regulations and workplace policies and practices • safe operating procedures, including the conduct of operational risk assessment and

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RANGE STATEMENT

	treatments associated with: • earth leakage boxes • lighting • power cables, including overhead service trays, cables and conduits • restricted access barriers • surrounding structures • traffic control • trip hazards • working at heights • work site visitors and the public • working in confined spaces • working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment:	• include: • automatic levels • drifts • hammers • podgers spanners • shifting spanners • sledge hammers • spirit levels • tape measures • wedges • wrenches • may include: • angle grinders • elevated work platforms • explosive power tools • laser levels • oxy-acetylene equipment • pneumatic tools • scaffolding • skids • water levelling equipment.

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RANGE STATEMENT

Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCRI3013A Perform intermediate rigging

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to erect cranes and tilt-up panels using intermediate rigging techniques. It includes load distribution and calculation.

Application of the Unit

Application of the unit This unit supports the attainment of skills and knowledge to use rigging techniques for erection of tilt-up panels, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry
CPCCRI3012A	Perform basic rigging

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied for the ***scope of work*** to be performed.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement.
	1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
	1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2. Select equipment.	2.1. Resources, materials and equipment are selected in accordance with load charts and inspected for compliance with job specifications.
	2.2. Lifting equipment is inspected according to manufacturer specifications.
	2.3. Lifting and load shifting equipment identified as inconsistent with manufacturer specifications is labelled, rejected and disposed of to prevent its use in any circumstance.
	2.4. Elevated work platforms and other means of mechanical access systems are determined and selected where specified.
	2.5. Fall arrest equipment, with ground level installation, is installed.
	2.6. Personnel cartage systems are determined and selected.
3. Connect equipment.	3.1. Loads are slung to ensure encapsulation of the whole of load.
	3.2. Part loads are slung to ensure full encapsulation of

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ELEMENT	PERFORMANCE CRITERIA
	the part load.
	3.3. Whole or part loads are slung to protect loads and secured to prevent uncontrolled movement.
	3.4. Load steerage lines are attached and used to prevent unnecessary load movement.
4. Move and position loads.	4.1. Load lifting/shifting order is determined to minimise necessity of double lifts.
	4.2. Lifting/shifting equipment is connected to the load.
	4.3. Test lift/shift is performed to ensure lift suitability.
	4.4. Load is safely moved to required destination and secured in position to client specifications or job requirements.
	4.5. Standard communication signals are used to coordinate safe movement of the load.
5. Remove rigging equipment.	5.1. Lifting/shifting equipment and packing is dismantled, lowered and inspected for wear.
	5.2. Logbook and site records are completed to company requirements.
6. Clean up.	6.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	6.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.
	6.3. Work completion procedures are applied and relevant personnel notified that work is finished.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements

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REQUIRED SKILLS AND KNOWLEDGE

- follow instructions
- notify completion of work
- read and interpret:
  - documentation from a variety of sources
  - drawings and specifications
- report faults
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication, such as hand signals
- written skills to complete logbooks, site records and relevant work completion procedures

- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- crane operations and limitations
- designs and functions of lifting equipment
- general construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations
- processes for the calculation of material requirements
- quality requirements
- relevant Acts, regulations and codes of practice
- rigging equipment and techniques
- signalling methods and communications
- tilt-up slab and pre-cast construction
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply of relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools, plant and equipment • communicate and work effectively and safely with others • erect and dismantle at least one lattice boom crane and fly with correct rigging and slinging techniques • erect a multi point pre-cast tilt-up slab of at least 10 tonne with correct rigging, slinging and de-rigging techniques, including determination of lifting points, temporary supports and permanent fixing points from drawings • apply both single and dual lifting techniques.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory

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EVIDENCE GUIDE

or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured

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learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to performing intermediate rigging

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RANGE STATEMENT

	• relevant Australian standards • safe work procedures relating to performing intermediate rigging • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Scope of work:	• planning and preparation includes work site inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements • calculations include load charts, fleet angles, diverter sheaves, lead loads, head loads, load angle factors, multiple fall, load share, load share distribution, pre-cast compliance charts and safe working loads • sling types include chain, flexible steel wire rope, and natural or synthetic fibre • load slinging methods are to include straight sling, adjustable sling, reeved sling and inclined sling • lifting techniques include single and dual lifts • lifting devices include shackles, turn buckles, jacks, chain winches, hand operated creeper winches, chain blocks, pulley blocks, come alongs, air winches, trolleys, eye bolts, include rigging screws, lifting lugs, lifting clutches and snatch blocks • load shifting equipment includes skates, hydraulic jacks, winches and rails • personnel cartage systems include man boxes and elevated work platforms • types of cranes include fixed cranes, tower cranes, hydraulic mobile cranes, lattice boom mobile cranes, slewing cranes, non-slewing cranes and gantry cranes.
Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation • handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor

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RANGE STATEMENT

- hazard control
- hazardous materials and substances, including cement and curing agents
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - power cables, including overhead service trays, cables and conduits
  - restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - working at heights
  - work site visitors and the public
  - working in confined spaces
  - working in proximity to others
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Tools and equipment:

- include:
  - automatic levels plumbing and levelling equipment
  - drifts
  - hammers
  - podgers spanners
  - shifting spanners
  - sledge hammers
  - spirit levels
  - tape measures
  - wedges
  - wrenches
- may include:
  - angle grinders

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RANGE STATEMENT

	• elevated work platforms • explosive power tools • laser levels • oxy-acetylene equipment • skids and pneumatic tools • water levelling equipment.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCRI3014A Perform advanced structural steel erection

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to erect or install advanced permanent steel structures, coordinating the slinging, stability, lifting, moving and placement of loads in conjunction with the crane operator.

It includes equipment selection, load distribution and calculation.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to erect and install permanent steel structures, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry
CPCCRI3012A	Perform basic rigging

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied to the ***scope of work*** to be performed.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement.
	1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
	1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2. Select equipment.	2.1. Resources, materials and equipment are selected in accordance with load charts and inspected for compliance with job specifications.
	2.2. Lifting equipment is inspected according to manufacturer specifications.
	2.3. Lifting and load shifting equipment identified as inconsistent with manufacturer specifications is labelled, rejected and disposed of to prevent its use in any circumstance.
	2.4. Elevated work platforms and other means of mechanical access systems are determined and selected where specified.
	2.5. Fall arrest equipment is installed.
	2.6. Personnel cartage systems are identified and selected.
3. Connect equipment.	3.1. Loads are slung to protect the load and prevent damage to the slings.
	3.2. Whole or part loads are secured to prevent uncontrolled movement.

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ELEMENT	PERFORMANCE CRITERIA
	3.3. Slings, or parts of slings, are attached to the load and positioned to ensure safe movement.
	3.4. Slings, or parts of slings, are attached to hook while the hoist wire is vertical.
	3.5. Tag lines are attached to the load where specified.
	3.6. Test lifts are performed to ensure safe and secure movement of the load where specified.
4. Move and position loads.	4.1. Load destination is determined and landing area prepared to accept the load.
	4.2. Lifting or pulling device is assembled and erected where specified.
	4.3. Load is safely moved to required destination and secured in position to client specifications or job requirements.
	4.4. Standard communication signals are used to coordinate safe movement of the load.
5. Remove rigging equipment.	5.1. Lifting/moving equipment and packing is dismantled, lowered and inspected for wear.
	5.2. Logbook and site records are completed to company requirements.
6. Clean up.	6.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	6.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.
	6.3. Work completion procedures are applied and relevant personnel notified that work is finished.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:

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REQUIRED SKILLS AND KNOWLEDGE

- read and interpret:
  - documentation from a variety of sources
  - drawings and specifications
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication, such as hand signals
- written skills to complete logbooks, site records and relevant work completion procedures

- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- basic rigging equipment and techniques
- crane operations and limitations
- designs and functions of lifting equipment
- general construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations
- processes for the calculation of material requirements
- quality requirements
- relevant Acts, regulations and codes of practice
- relevant Australian standards
- signalling methods and communications
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply of relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools, plant and equipment • communicate and work effectively and safely with others • complete the erection of a portal frame building, including trusses, bracing, purlins and girts, incorporating at least one strongback lift and one bowstring lift, all in accordance with manufacturer and engineer's specifications.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement

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- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice,

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EVIDENCE GUIDE

with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to performing advanced structural steel erection
- relevant Australian standards
- safe work procedures relating to performing

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RANGE STATEMENT

	advanced structural steel erection • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Scope of work:	• planning and preparation includes work site inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements • calculations include load charts, fleet angles, diverter sheaves, lead loads, head loads, load angle factors, multiple fall, load share, pre-cast compliance charts and safe working loads • sling types include chain and flexible steel wire rope • load slinging methods include straight sling, adjustable sling, reeved sling and inclined sling • types of cranes include fixed cranes, tower cranes, hydraulic mobile cranes, lattice boom mobile cranes, slewing cranes, non-slewing cranes and gantry cranes • advanced lifting techniques include strongbacks and bowstrings • steel components include columns, beams, bracing, rafters, purlins, girts, bridging and fly bracing, trusses, freestanding structures and portal frame buildings.
Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation • handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor • hazard control • hazardous materials and substances, including cement and curing agents • organisational first aid • PPE prescribed under legislation, regulations and workplace policies and practices • safe operating procedures, including the conduct of operational risk assessment and

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RANGE STATEMENT

	treatments associated with: • earth leakage boxes • lighting • power cables, including overhead service trays, cables and conduits • restricted access barriers • surrounding structures • traffic control • trip hazards • working at heights • work site visitors and the public • working in confined spaces • working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment:	• include: • air winches • chain blocks • chain winches • come alongs • drifts • eye bolts • hammers • hand operated creeper winches • jacks • podgers spanners • pulley blocks • shackles • shifting spanners • sledge hammers • spirit levels and automatic levels • tape measures • trolleys • turn buckles • wedges • wrenches

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RANGE STATEMENT

	• may include:
	  • angle grinders
	  • elevated work platforms
	  • explosive power tools
	  • laser levels
	  • lifting clutches and snatch blocks
	  • lifting lugs
	  • oxy-acetylene equipment
	  • pneumatic tools and scaffolding
	  • rigging screws
	  • skids
	  • water levelling equipment.

Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCRI3015A Perform advanced tilt-up slab erection

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to conduct advanced tilt-up slab erections coordinating the slinging, stability, lifting, moving, placement and storage of slabs in conjunction with the crane operator. It includes equipment selection, load distribution and calculation.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to perform advanced tilt-slab erection, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry
CPCCRI3013A	Perform intermediate rigging

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied to the ***scope of work*** to be performed.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement.
	1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
	1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2. Select equipment.	2.1. Resources, materials and equipment are selected in accordance with load charts and inspected for compliance with job specifications.
	2.2. Lifting equipment is inspected according to manufacturer specifications.
	2.3. Lifting and load shifting equipment identified as inconsistent with manufacturer specifications is labelled, rejected and disposed of to prevent its use in any circumstance.
	2.4. Elevated work platforms and other means of mechanical access systems are determined and selected where specified.
	2.5. Fall arrest equipment is installed.
	2.6. Personnel cartage systems are identified and selected.
3. Erect tilt-up slabs.	3.1. Job sequencing schedule and documentation are identified and communicated to team members to ensure coordination.
	3.2. Load mass is calculated and confirmed.

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ELEMENT	PERFORMANCE CRITERIA
	3.3. Erection sequence for tilt-up slab components is identified.
	3.4. Lifting or pulling devices are assembled and erected for the movement of loads.
	3.5. Load is slung.
	3.6. Load is shifted in accordance with job safety analysis (JSA) and safe work method statement.
	3.7. Stability of load is maintained during lifting, tilting and transportation.
	3.8. Load is directed to landing position in accordance with engineer's specifications.
4. Position and anchor.	4.1. Tilt slab components are positioned in accordance with engineer's specifications.
	4.2. Shape of structure is achieved by checking dimensions and applying temporary bracing.
	4.3. Tilt slab components are anchored in accordance with manufacturer and engineer's specifications.
5. Remove rigging equipment.	5.1. Lifting/shifting equipment and packing is dismantled, lowered and inspected for wear.
	5.2. Logbook and site records are completed to company requirements.
6. Clean up.	6.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	6.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.
	6.3. Work completion procedures are applied and relevant personnel notified that work is finished.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

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REQUIRED SKILLS AND KNOWLEDGE

- communication skills to:
  - determine requirements
  - follow instructions
  - notify completion of work
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to complete logbooks, site records and relevant work completion procedures
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- cast in lifting and bracing inserts
- crane types operations and limitations
- designs and functions of lifting equipment
- documentation requirements
- elevated work platforms
- general construction terminology
- JSA and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- panel lifting point design
- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations
- processes for the calculation of material requirements
- quality requirements
- relevant Acts, regulations and codes of practice

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REQUIRED SKILLS AND KNOWLEDGE

- rigging equipment and techniques
- signalling methods and communications
- tilt-up slab and pre-cast construction
- tilt-up slab code of practice
- tilt-up slab storage
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply of relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- erect one multi-point pre-cast tilt-up slab and one cast in situ tilt-up slab, each of at least 10 tonne with correct rigging, slinging and de-rigging techniques, including determination of lifting points, temporary supports and permanent fixing points from panel erection drawings and following the lift plan, including:
  - positioning and bracing the slab
  - safe unloading from the truck
  - rotating panel from one plane to another
  - incorporating at least two bracing techniques.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge

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EVIDENCE GUIDE

will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured

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EVIDENCE GUIDE

learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to performing advanced tilt-up slab

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RANGE STATEMENT

	erection • relevant Australian standards • safe work procedures relating to performing advanced tilt-up slab erection • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Scope of work:	• planning and preparation includes work site inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements • calculations include charts, fleet angles, diverter sheaves, lead loads, head loads, load angle factors, multiple fall, load share, load share distribution, pre-cast compliance charts and safe working loads • sling types include to chain and flexible steel wire rope • load slinging methods include straight sling, adjustable sling, reeved sling and inclined sling • personal cartage systems include personnel boxes and elevated work platforms • types of cranes include fixed cranes, tower cranes, hydraulic mobile cranes, lattice boom mobile cranes, slewing cranes, non-slewing cranes and gantry cranes • tilt-up slabs include prefabricated and cast in situ tilt-up slabs and slabs with cast-in lifting and/or bracing inserts • tilt-up slabs are to be erected following panel erection drawings and lift plans • bracing of tilt-up slabs is to include lateral bracing, end bracing, main bracing, knee bracing and deadman bracing • advanced lifting techniques include rotation (turning panel from one plane to another), standard lift from a truck and lift from flat on ground all to engineer's specifications.
Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation • handling activities that may require the

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RANGE STATEMENT

and may include:	assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • working at heights
	  • work site visitors and the public
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment:	• include:
	  • air winches
	  • chain blocks
	  • chain winches
	  • come alongs
	  • drifts
	  • eye bolts
	  • hammers
	  • hand operated creeper winches
	  • jacks
	  • podgers spanners
	  • pulley blocks

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RANGE STATEMENT

	• shackles • shifting spanners • sledge hammers • spirit levels and automatic levels • plumbing/levelling equipment • tape measures • trolleys • turn buckles • wedges • wrenches • may include: • angle grinders • elevated work platforms • explosive power tools • hydraulic jacks • laser levels • lifting clutches and snatch blocks • lifting lugs • oxy-acetylene equipment • pneumatic tools • rigging screws • skates • skids • water levelling equipment • winches and rails.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.

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Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCRI3016A Perform advanced tower crane erection

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to conduct advanced tower crane erection coordinating the slinging, stability, lifting, moving and placement of tower cranes and tower crane sections in conjunction with the crane operator.

It includes equipment selection, load distribution and calculation.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to erect a tower crane, including coordination of all aspects of lifting, moving and placing sections, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry
CPCCRI3013A	Perform intermediate rigging

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied for the ***scope of work*** required. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2. Plan crane erection.	2.1. Crane erection, rigging and dismantling plan are identified and checked for conformity with manufacturer and engineer's specifications. 2.2. Hazard control measures are planned and implemented. 2.3. Foundation to support crane base is checked for conformity and structural suitability in accordance with engineer's specifications.
3. Select equipment.	3.1. Resources, materials and equipment are selected in accordance with load charts and inspected for compliance with job specifications. 3.2. Lifting equipment is inspected according to regulatory requirements and manufacturer specifications. 3.3. Lifting and load shifting equipment identified as inconsistent with manufacturer specifications is labelled, rejected and disposed of to prevent its use in any circumstance. 3.4. Elevated work platforms and other means of

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ELEMENT	PERFORMANCE CRITERIA
	mechanical access systems are determined and selected where specified.
	3.5. Fall arrest equipment is installed.
	3.6. Personnel cartage systems are identified and selected.
4. Assemble and erect tower crane.	4.1. Base of crane is located and positioned in accordance with manufacturer and engineer's specifications.
	4.2. Bottom tower and climbing frame/transition piece are erected and installed level and plumb to manufacturer and engineer's specifications.
	4.3. Tower braces or guys are installed and secured to support tower crane.
	4.4. Mast, turntable, machine deck and power pack of crane are assembled, erected and installed in accordance with manufacturer specifications.
	4.5. Main jib and counter jib are assembled and erected in accordance with manufacturer specifications.
	4.6. Counter weights are lifted into cradles and secured in accordance with manufacturer specifications.
	4.7. Wire ropes and hook and block reeving are installed to manufacturer specifications.
5. Climb (raise/lower) tower crane.	5.1. Drop ladder is removed and monorail is placed and secured.
	5.2. Crane is secured and placed at balance point ready for climbing.
	5.3. Tower bolts to transition piece are removed, drifts fitted and rollers checked.
	5.4. Tower section is moved into place in accordance with manufacturer specifications.
	5.5. Crane is reconnected with bolts and a visual check of all components and connectors is conducted.
6. Dismantle crane.	6.1. Electrical and hydraulic lines are safely disconnected.
	6.2. Power pack, counterweights, climbing frame and crane deck are dismantled and safely lowered to the ground.
7. Clean up.	7.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	7.2. Plant, tools and equipment are cleaned, checked,

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ELEMENT	PERFORMANCE CRITERIA
	maintained and stored in accordance with manufacturer recommendations and standard work practices. 7.3. Work completion procedures are applied and relevant personnel notified that work is finished.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - follow instructions
  - notify completion of work
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to complete work completion procedures
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

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REQUIRED SKILLS AND KNOWLEDGE

- crane erection, climbing and dismantling techniques
- crane types, capabilities, operations and limitations
- designs and functions of lifting equipment
- documentation requirements
- general construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations
- processes for the calculation of material requirements
- quality requirements
- relevant Acts, regulations and codes of practice
- rigging equipment and techniques
- signalling methods and communications
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply of relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- fully erect and rig one hammerhead tower crane and one luffing boom tower crane (including a jib for each) to manufacturer and engineer's specifications
- complete the raising of one hammerhead tower crane and one luffing boom tower crane by installing at least two extra sections for each.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

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- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and

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separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to performing advanced tower crane erection
- relevant Australian standards
- safe work procedures relating to performing

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RANGE STATEMENT

	advanced tower crane erection • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Scope of work:	• planning and preparation includes work site inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements • calculations include load charts, fleet angles, diverter sheaves, lead loads, head loads, load angle factors, multiple fall, load share, load share distribution, pre-cast compliance charts and safe working loads • sling types include chain, flexible steel wire rope, and natural or synthetic fibre • load slinging methods include straight sling, adjustable sling, reeved sling and inclined sling • personal cartage systems include personnel boxes and elevated work platforms • types of cranes to be used in erection include fixed cranes, tower cranes, hydraulic mobile cranes, lattice boom mobile cranes, slewing cranes • types of cranes to be erected include hammerhead tower cranes, luffing boom tower cranes and self erecting tower cranes • crane components to be erected include crane bases, bottom towers, tower sections, climbing frame/transition pieces, tower braces, guys, masts, turntables, machine decks, power packs, main jibs, counter jibs, counter weights, wire ropes, hook and block reeving and connecting bolts.
Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation • handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor • hazard control • hazardous materials and substances, including

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RANGE STATEMENT

	cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • working at heights
	  • work site visitors and the public
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment:	• include:
	  • air winches
	  • chain blocks
	  • chain winches
	  • come alongs
	  • drifts
	  • eye bolts
	  • hammers
	  • hand operated creeper winches
	  • jacks
	  • plumbing/levelling equipment
	  • pneumatic wrenches
	  • podgers spanners
	  • pulley blocks
	  • shackles
	  • shifting spanners

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RANGE STATEMENT

	• sledge hammers • spirit levels and automatic levels • tape measures • torque multipliers • trolleys • turn buckles • wedges • wrenches • may include: • angle grinders • elevated work platforms • explosive power tools • hydraulic jacks • laser levels • lifting clutches and snatch blocks • lifting lugs • oxy-acetylene equipment • pneumatic tools • rigging screws • skates • skids • water levelling equipment • winches and rails.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.

Unit Sector(s)

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Unit sector Construction

Functional area

Functional area

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CPCCRT2001A Handle roof tiling materials

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to handle, store and apply environmental principles to roof tiling products.

It includes the preparation, handling, sorting, stacking, distribution and disposal of tiling products, materials and components in the application of the tiles to the roof.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to safely and effectively handle, distribute and store roof tiling materials, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied for the ***scope of work*** performed. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, ***tools and equipment*** selected to carry out tasks that are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2. Receive, sort and distribute roof tiling materials.	2.1. Roof tiling products, ***materials*** and components are identified and checked for conformity to material schedule, plans, ***quality requirements*** and specifications on delivery to site. 2.2. Handling characteristics of roof tiling material and components are identified and safe and effective handling techniques are applied in accordance with safe work method statements and workplace procedures. 2.3. Fall safety devices are installed to roof perimeter and handled in accordance with regulatory and workplace requirements. 2.4. Elevator is handled, assembled and erected at job location to manufacturer specifications and workplace requirements. 2.5. Roof surface sarking and batten materials are handled and loaded onto roof and positioned ready for installation in accordance with specified tile and job specifications. 2.6. Roof tiling material and components are sorted to suit material type and size, and stacked for ease of identification and retrieval for task sequence. 2.7. Roof tiling material and components are transferred, loaded onto roof, supported and evenly distributed.
3. Handle and remove	3.1. Materials are handled safely and effectively

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ELEMENT	PERFORMANCE CRITERIA
surplus material from roof.	according to material safety data sheets (MSDS) and regulatory authorities' requirements. 3.2. Hazardous material is identified for separate handling by authorised personnel. 3.3. Surplus roof tiling material and components are loaded and transferred from roof to ground. 3.4. Materials are stored safely and effectively according to MSDS and requirements of regulatory authorities. 3.5. Roof, guttering and downpipes are cleared free of waste and surplus material.
4. Clean up	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 4.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities

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REQUIRED SKILLS AND KNOWLEDGE

- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- characteristics and applications of roof tiling materials
- general construction terminology
- job safety analysis (JSA) and safe work method statements
- materials storage and environmentally friendly waste management
- MSDS
- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations
- quality requirements
- roof construction systems and structures and tiling considerations
- roof tiling materials handling and disposal techniques and procedures
- workplace and equipment safety requirements.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply of relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice

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EVIDENCE GUIDE

	applicable to workplace operations
	• comply with organisational policies and procedures, including quality requirements
	• safely and effectively use tools, plant and equipment
	• communicate and work effectively and safely with others
	• as a minimum, transfer sufficient materials to sark, batten and tile 45 square metres of roof from ground level to the roof working area, greater than 1.8m high; relocate the above materials from the work area to ground level, position a bucket and dispose of waste material from a typical tiling task, ensuring:
	  • correct identification of requirement and sorting and distributing roof tiling material
	  • correct selection and use of appropriate processes, tools and equipment
	  • completing all work to specification.

Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with

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EVIDENCE GUIDE

	disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge • all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed. Supplementary evidence of competency may be

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EVIDENCE GUIDE

	obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:	• diagrams or sketches • instructions issued by authorised organisational or external personnel • manufacturer specifications and instructions, where specified • MSDS • memos • regulatory and legislative requirements pertaining to handling roof tiling materials • relevant Australian standards • safe work procedures relating to handling roof tiling materials • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Scope of work:	• includes receiving, handling, sorting and loading roof tiling products in support of a tiling job; and removing surplus materials from the roof and disposing of waste materials • waste materials include banding straps, packing pieces, broken or damaged goods; and cardboard, plastic, paper and surplus material • specifications include tile colour, tile profile, type of bond, nailing sequence and wind

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RANGE STATEMENT

	category • tiles may be interlocking (terracotta) or non-interlocking (concrete) and conform to the requirements of relevant Australian Standards • pointing material may be flexible pointing material or its equivalent.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • working at heights
	  • work site visitors and the public
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment:	• include:
	  • air compressors and hoses
	  • bedding frames
	  • blowers

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RANGE STATEMENT

- brooms
- buckets
- calculators
- chalk lines
- chisels
- chutes
- concrete mixers
- elevators
- eyelets
- gutter protectors
- hammers
- hand saws
- hoppers high pressure
- ladders
- measuring tapes and rules
- nail bags
- nail guns
- pincers
- power drills
- power leads
- power saws
- safety harness and static lines
- safety rails
- shovels
- signage and barricades
- squares
- string lines
- tile cutters
- trowels
- water cleaners

- may include:
  - blocks
  - breaks or cutting irons
  - elevated work platforms
  - guillotines
  - rippers
  - scaffolds
  - slate cutters

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RANGE STATEMENT

	• slate reefers • slater's hammers • slating knives • small compressors • small petrol or diesel engines.
Environmental requirements include:	• clean-up management • dust and noise • stormwater management • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.

Materials:	• include:
	  • adhesives
	  • concrete and terracotta tiles
	  • fastenings and other mechanical fixings
	  • flashings
	  • mortar
	  • sarking materials
	  • timber and metal battens
	• may include:
	  • flexible pointing material
	  • lead
	  • shingles
	  • slate
	  • other hand manufactured products.

Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.

Unit Sector(s)

Unit sector Construction

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Functional area

Functional area

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CPCCRT2002A Use roof tiling tools and equipment

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to safely and effectively use the hand and power tools used in roof tiling.

It includes the identification, selection and use of tools for specific applications and their storage.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to use the hand and power tools required for roofing work, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied for the ***scope of work*** performed. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2. Select tools.	2.1. ***Tools*** are selected consistent with needs of the job. 2.2. Tools, including leads and hoses, are checked for tags, serviceability and safety and any faults are reported to supervisor in accordance with workplace requirements. 2.3. Power tool guards, retaining bolts, couplings, gauges and controls are checked and maintained in accordance with manufacturer recommendations. 2.4. Equipment is selected to hold, position or support material for hand tool application where applicable. 2.5. Pre-operational checks, including lubricants, hydraulic fluid and water, are completed in accordance with manufacturer recommendations.
3. Use tools.	3.1. Power and compressed air supply are connected to work area. 3.2. Start up and shut down procedures are performed in accordance with workplace procedures. 3.3. Tools are safely and effectively used according to manufacturer recommendations and workplace requirements. 3.4. Tools are safely located when not in immediate use.
4. Select plant and equipment.	4.1. Functions and limitations of plant and equipment used in roof tiling are identified. 4.2. Plant and equipment are selected consistent with hazard minimisation and needs of job. 4.3. Method of operation of plant and equipment is identified. 4.4. Plant and equipment are checked for safety, and

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ELEMENT	PERFORMANCE CRITERIA
	faults are reported to supervisor. 4.5. Requirements for guarding, cut-off switches, retaining bolts, couplings, gauges and controls are identified and checked. 4.6. Requirements for operating and using plant and equipment are recognised and adhered to.
5. Use plant and equipment.	5.1. ***Material*** is located and held in position for application where applicable. 5.2. Plant and equipment are safely and effectively used in accordance with workplace requirements. 5.3. Plant and equipment are safely located and switched when not in immediate use. 5.4. Plant and equipment are inspected, maintained and tagged and any faults are reported in accordance with workplace procedures.
6. Clean up.	6.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 6.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults

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REQUIRED SKILLS AND KNOWLEDGE

- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- characteristics and applications of roof tiling materials
- general construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- measuring and marking
- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations
- processes for the calculation of material requirements
- quality requirements
- techniques and procedures for using roof tiling tools and equipment
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply of relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum, follow work instructions, operating procedures and inspection practices to use the listed roof tiling tools and equipment for their appropriate application, ensuring:
  - correct selection and use of appropriate processes, tools and equipment
  - no damage to materials, tools or equipment
  - completion of all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

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EVIDENCE GUIDE

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace

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EVIDENCE GUIDE

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements

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RANGE STATEMENT

	pertaining to the use of roof tiling tools and equipment • relevant Australian standards • safe work procedures relating to the use of roof tiling tools and equipment • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Scope of work:	• includes the operation of hand and power tools and equipment in roof tiling applications • involves their identification, correct application and effective operation and storage.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • working at heights
	  • work site visitors and the public
	  • working in proximity to others

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RANGE STATEMENT

	• use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Environmental requirements include:	• clean-up management • dust and noise • stormwater management • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice

Tools:	• include:
	  • bedding frames
	  • blowers
	  • brooms
	  • buckets
	  • calculators
	  • chisels
	  • concrete mixers
	  • elevators
	  • embossing mallets
	  • fall safety devices
	  • gutter protectors
	  • hammers
	  • hand saws
	  • high pressure water cleaners
	  • ladders
	  • measuring tapes and rules
	  • nail bags
	  • nail guns
	  • pincers
	  • power drills
	  • power leads
	  • power saws
	  • shovels
	  • squares
	  • string and chalk lines
	  • tile cutters

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RANGE STATEMENT

- trowels
- may include:
  - blocks
  - breaks or cutting irons
  - guillotines
  - rippers
  - scaffolds
  - slate cutters
  - slate reefers
  - slater's hammers
  - slating knives
  - small compressors
  - small petrol or diesel engines.

Materials:

- include:
  - adhesives
  - concrete and terracotta tiles
  - fastenings and other mechanical fixings
  - flashings
  - mortar
  - sarking materials
  - timber and metal battens
- may include:
  - flexible pointing materials
  - lead
  - shingles and other hand manufactured products
  - slate.

Unit Sector(s)

Unit sector Construction

Functional area

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Functional area

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CPCCRT3001A Tile regular roofs

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to install roof tiles to different but regular roof structures.

It includes preparing, setting out, installing and fixing tiles to a roof.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to safely tile regular roof structures, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained for relevant ***information***, confirmed and applied for the ***scope of work*** performed.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. Plant, ***tools and equipment*** selected to carry out tasks that are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement.
	1.5. ***Materials*** quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
	1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2. Prepare roof face.	2.1. Fall arrest system is installed to roof perimeter following regulations and workplace requirements.
	2.2. Elevator is assembled and operated in accordance with manufacturer instructions and workplace procedures.
	2.3. Roof surface and structure are checked for stability and safe access to roof for tile installation.
	2.4. Roof surface is set out and sarked to manufacturer recommendations for specified tile and job specifications.
3. Cut and fix battens.	3.1. Battens are measured and cut using approved work methods and required personal protective equipment.
	3.2. Battens are fixed using selected fasteners at specified centres according to manufacturer recommendations.
	3.3. Completed work is checked for correct alignment and fixing.
4. Install tiles.	4.1. Tiles are loaded onto roof, supported and evenly distributed.

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ELEMENT	PERFORMANCE CRITERIA
	4.2. Roof tiles are spread, cut, secured and installed to manufacturer specifications.
	4.3. Roof tiles are bedded using correct mortar mix, maintaining alignment.
	4.4. Roof tiles are pointed with mortar to a flush, smooth finish in accordance with job specifications and are installed to manufacturer specifications.
5. Clean up.	5.1. Roof, guttering and downpipes are cleared free of waste and surplus material.
	5.2. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	5.3. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to complete logbooks, site records and relevant work completion procedures
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials

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REQUIRED SKILLS AND KNOWLEDGE

- numeracy skills to apply measurements and calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- characteristics and applications of roof tiling materials
- general construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- measuring and marking
- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations
- processes for the calculation of material requirements
- quality requirements
- roof construction systems and structures and tiling considerations
- roof tiling techniques and procedures
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply of relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum, tile 45 square metres of a roof frame, incorporating a 1.5m hip, a 1.5m valley, a 1.5m gable and a 1.5m top ridge, including the appropriate sarking, battens, tile cutting, bedding and pointing, ensuring:
  - correct identification of requirement and installation and finishing of the tiles
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory

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EVIDENCE GUIDE

or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured

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EVIDENCE GUIDE

learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

1.1. ***Information*** includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to tiling a regular roof

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RANGE STATEMENT

	• relevant Australian standards • safe work procedures relating to tiling a regular roof • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
1.2. ***Scope of work***:	• includes preparing a regular roof for tiling by sarking and battening; and fixing and finishing tiles, including their installation, bedding and pointing • regular roofs include gable, hip, hip and valley, pitch roofs, skillion, Dutch gable and layback gable • specifications include tile colour, tile profile, type of bond, nailing sequence and wind category • tiles may be interlocking or non-interlocking and conform to Australian standards • types of terracotta tiles include Marseille, modern French, Swiss, Spanish and French • types of concrete tiles include Elebane, Villa, Centurian, Chateau and shingle (concrete) • pointing material may be mortar, flexible pointing material or its equivalent.

1.3. ***Safety*** (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting

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RANGE STATEMENT

- power cables, including overhead service trays, cables and conduits
- restricted access barriers
- surrounding structures
- traffic control
- trip hazards
- working at heights
- working in proximity to others, work site visitors and the public
- working safely on roofs
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

1.4. ***Tools and equipment***:

- include:
  - air compressors and hoses
  - bedding frames
  - blowers
  - brooms
  - buckets
  - calculators
  - chalk lines
  - chisels
  - concrete mixers
  - elevators
  - fall safety devices
  - gutter protectors
  - hammers
  - hand saws
  - high pressure water cleaners
  - ladders
  - measuring tapes and rules
  - nail bags
  - nail guns
  - pinchers
  - power drills
  - power leads
  - power saws

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RANGE STATEMENT

	• shovels • squares • string lines • tile cutters • trowels • may include: • blocks • breaks or cutting irons • guillotines • knives • planes • rippers • scaffolds • slate cutters • slate reefers • slater's hammers • slating knives • small compressors • small petrol or diesel engines • tin snips.
1.5. ***Materials***:	• include: • adhesives • concrete and terracotta tiles • fastenings and other mechanical fixings • flashings • mortar • sarking materials • timber and metal battens • may include: • flexible pointing materials • lead • shingles • slate • other hand manufactured products.
1.6. ***Quality requirements*** include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.

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RANGE STATEMENT

1.7. ***Environmental requirements*** include:	• clean-up management • dust and noise • stormwater management • vibration • waste management.
1.8. ***Statutory and regulatory authorities*** include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCRT3002A Tile irregular roofs

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to install roof tiles to a roof incorporating irregular shapes or unequal pitches and incorporating a dormer window with tiled surrounds.

It includes the preparation, setting out, installing and fixing of tiles to a roof.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to safely tile irregularly shaped roofs which include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied to the ***scope of work*** performed. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, ***tools and equipment*** selected to carry out tasks that are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. ***Materials*** quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2. Prepare roof face.	2.1. Fall arrest system is installed to roof perimeter following regulatory and workplace requirements. 2.2. Elevator is assembled and operated in accordance with manufacturer instructions and workplace procedures. 2.3. Roof surface is set out, sarked and battened to manufacturer recommendations for the specified tile and job specifications. 2.4. Roof surface and structure are checked for stability and safe access to roof for tile installation. 2.5. Tiles are loaded onto roof, supported and evenly distributed.
3. Install tiles.	3.1. Roof tiles are spread, cut, secured and installed to manufacturer specifications. 3.2. Hip and ridge tiles are bedded using correct mortar mix, maintaining alignment. 3.3. Valley, hips, ridges, flexible point plus acrylic finishes and gables are pointed with like-colour mortar to a flush, smooth finish in accordance with

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ELEMENT	PERFORMANCE CRITERIA
	job specifications.
4. Tile roof openings and lay back surfaces and/or facades.	4.1. Opening surrounds are checked for soakers and flashings, and prepared for tiles. 4.2. Surrounds and weatherproofing are tiled to job specifications. 4.3. Tiles are spread and secured to steep and vertical surfaces, by individual tile fixing to specifications.
5. Clean up.	5.1. Roof, guttering and downpipes are cleared free of waste and surplus material. 5.2. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 5.3. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to complete logbooks, site records and relevant work completion procedures
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials

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REQUIRED SKILLS AND KNOWLEDGE

- numeracy skills to apply measurements and calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- characteristics and applications of roof tiling materials
- general construction terminology
- irregular roofs and tiling considerations
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- measuring and marking
- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations
- processes for the calculation of material requirements
- quality requirements
- roof construction systems and structures
- roof tiling techniques and procedures
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply of relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum, tile 45 square metres of an irregular roof frame of any type, incorporating a 1.5m hip, a 1.5m valley, a 1.5m gable and a 1.5m top ridge, including the appropriate sarking, battens, tile cutting, bedding and pointing, ensuring:
  - correct identification of requirement and installation and finishing of the tiles
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

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EVIDENCE GUIDE

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace

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EVIDENCE GUIDE

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements

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RANGE STATEMENT

	pertaining to tiling an irregular roof • relevant Australian standards • safe work procedures relating to tiling an irregular roof • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Scope of work:	• includes preparation for tiling an irregular roof by sarking and battens and the fixing and finishing of tiles, including their installation, bedding and pointing • irregular roofs include roofs constructed to irregular shaped plans where corners are not right angled and include Dutch hip, turrets, spires, unequal pitch surfaces and Cape Cod, mansard, bellcast, pyramid, bed and point valleys, and steel framed roof trusses • openings in irregular roofs include chimneys, roof ventilators, cupolas, dormer windows, two storey inserts, skylights, pipes and flues • specifications include tile colour, tile profile, type of bond, nailing sequence and wind category • tiles may be interlocking (terracotta) or non-interlocking (concrete) and conform to the requirements of relevant Australian Standards • types of terracotta tiles include Marseille, modern French, Swiss, Spanish, Roman and new French • types of concrete tiles include Elebane, Villa, Centurian, Chateau and shingle (concrete) • pointing material may be flexible pointing material or its equivalent.
Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation • handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor • hazard control • hazardous materials and substances, including

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RANGE STATEMENT

	cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • working at heights
	  • work site visitors and the public
	  • working in proximity to others
	  • working safely on roofs
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment:	• include:
	  • air compressors and hoses
	  • blowers
	  • brooms
	  • buckets
	  • calculators
	  • chalk lines
	  • chisels
	  • concrete mixers
	  • elevators
	  • fall safety devices
	  • gutter protectors
	  • hammers
	  • hand saws
	  • high pressure water cleaners
	  • ladders

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RANGE STATEMENT

- measuring tapes and rules
- nail bags
- nail guns
- pincers
- power drills
- power leads
- power saws
- shovels
- squares
- string lines
- tile cutters
- trowels

- may include:
  - blocks
  - breaks or cutting irons
  - guillotines
  - rippers
  - scaffolds
  - slate cutters
  - slate reefers
  - slater's hammers
  - slating knives
  - small compressors
  - small petrol or diesel engines.

Materials:

- include:
  - adhesives
  - concrete and terracotta tiles
  - fastenings and other mechanical fixings
  - flashings
  - mortar
  - sarking materials
  - timber and metal battens
- may include:
  - flexible pointing material
  - lead
  - shingles
  - slate
  - other hand manufactured products.

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RANGE STATEMENT

Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • stormwater management • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCRT3003B Repair and replace valleys, valley irons and flashings

Modification History

Photovoltaic (solar) panels added to range statement
Equivalent to CPCCRT3003A

Unit Descriptor

This unit of competency specifies the outcomes required to repair and replace valley roof sections and flashings to different types and styles of tiled roof structures.
It includes the preparation, set out, repair, replacement and pointing of tiles to valley sections of roof structures.

Application of the Unit

This unit supports the attainment of skills and knowledge to repair and replace valley roof sections, including flashings, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied to the ***scope of work*** performed.
		1.2	***Safety (OHS)*** requirements are followed in accordance with safety plans and policies.
		1.3	Signage and barricade requirements are identified and implemented.
		1.4	Plant, ***tools and equipment*** selected to carry out tasks that are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement.
		1.5	***Materials*** quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
		1.6	Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
		1.7	***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2	Prepare valley section for repair.	2.1	Damaged area is identified and located in accordance with plans and specifications.
		2.2	Fall arrest system is installed to roof perimeter in

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			accordance with regulatory and workplace requirements.
		2.3	Tiles to be repaired or replaced are identified from a removed sample.
		2.4	Damaged tiles are removed to ensure minimum disturbance to remaining roof tiles.
		2.5	Pointing or mortar is removed ensuring no damage to roof tiles.
		2.6	Damaged area is left clean and free of loose waste.
		2.7	Roof structure valleys and flashing installations are checked for soundness and adequacy according to specifications and manufacturer recommendations.
3	Repair valley sections.	3.1	Damaged structural components of valley section of roof are disassembled and repaired or replaced in accordance with job specifications and manufacturer recommendations.
		3.2	Roof tie down fixings are replaced or installed to roof structure in accordance with job specifications and manufacturer recommendations.
		3.3	Replacement valley flashings are fabricated and installed in accordance with job specifications and manufacturer recommendations.
		3.4	Work area and material surface are cleaned free of debris and waste materials in accordance with workplace procedures.
		3.5	Replacement and recycled roof tiles are retained and sorted to ensure conformity to requirements in matching original roof tiles to specification.
		3.6	Loose mortar is removed from roof tile surface and mortar joints are struck to match existing or specified colour of roof tiles.
4	Replace roof tiles.	4.1	Roof tiles are examined individually to ensure conformity to requirements in matching original tiles.
		4.2	Mortar is mixed to required composition to match original specifications.

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		4.3	Roof tiles are laid to maintain conformity to original gauge and alignment, while maintaining bond to specifications.
		4.4	Roof tiles are laid to produce designed features in accordance with original design and specifications.
5	Replace pointing material.	5.1	Pointing material is prepared and distributed for use to design specifications.
		5.2	Pointing material is applied to ridge tile joints to specification.
		5.3	Joints are pointed to produce matching finish to existing surrounds, and loose material is removed from roof tile surface.
6	Clean up.	6.1	Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
		6.2	Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

communication skills to:

- determine requirements
- follow instructions
- read and interpret:
  - documentation from a variety of sources
  - drawings and specifications
- report faults
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- characteristics and applications of materials used in repairing tiled roof valleys, valley irons and flashings
- general construction terminology
- installation of roof battens, sarking and flashing
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- measuring and marking
- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations

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- processes for the calculation of material requirements
- quality requirements
- roof construction systems and structures and tiling considerations
- techniques and procedures for repairing tiled roof valleys, valley irons and flashings
- working on roof structures
- workplace and equipment safety requirements.

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply of relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum, remove and replace 1.5 lineal metres of a tiled roof and damaged roof valley iron, ensuring:
    - correct identification of requirement and completion of repairs and replacement
    - correct selection and use of appropriate processes, tools and equipment

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- completing all work to specification
- compliance with regulations, standards and organisational quality procedures and processes.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles

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- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining

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to repairing and replacing valleys, valley irons and flashings
- relevant Australian standards
- safe work procedures relating to repairing and replacing valleys, valley irons and flashings
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Scope of work:

- includes repairing or replacing valley sections and valley irons, replacing tiles and repointing a repaired roof
- specifications include tile colour, tile profile, type of bond, nailing sequence and wind category
- tiles may be interlocking (terracotta) or non-interlocking (concrete) and conform to standards
- pointing material may be flexible pointing material or its equivalent.

Safety (OHS) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
- hazard control
- hazardous materials and substances, including cement and curing agents
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - photovoltaic (solar) panels
  - power cables, including overhead service trays, cables and conduits
  - restricted access barriers

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- surrounding structures
- traffic control
- trip hazards
- working at heights
- work site visitors and the public
- working in proximity to others
- working safely on roofs
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Tools and equipment:

- include:
  - air compressors and hoses
  - bedding frames
  - blowers
  - brooms
  - buckets
  - calculators
  - chalk lines
  - chisels
  - concrete mixers
  - elevators
  - fall safety devices
  - gutter protectors
  - hammers
  - hand saws
  - high pressure water cleaners
  - ladders
  - measuring tapes and rules
  - nail bags
  - nail guns
  - pincers
  - power drills
  - power leads
  - power saws
  - shovels
  - squares
  - string lines
  - tile cutters

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- trowels
- may include:
  - blocks
  - breaks or cutting irons
  - guillotines
  - rippers
  - scaffolds
  - slate cutters
  - slate reefers
  - slater's hammers
  - slating knives
  - small compressors
  - small petrol or diesel engines.

Materials:

- include:
  - adhesives
  - concrete and terracotta tiles
  - fastenings and other mechanical fixings
  - flashings
  - mortar
  - sarking materials
  - timber and metal battens
- may include:
  - flexible pointing material
  - lead
  - shingles
  - slate
  - other hand manufactured products.

Quality requirements include relevant regulations, including:

- Australian standards
- internal company quality policy and standards
- manufacturer specifications
- workplace operations and procedures.

Environmental requirements include:

- clean-up management
- dust and noise
- stormwater management
- vibration
- waste management.

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Statutory and regulatory authorities include:

- federal, state and local authorities administering the applicable Acts, regulations and codes of practice.

Unit Sector(s)

Functional area

Unit sector Construction

Custom Content Section

Not applicable.

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CPCCRT3004B Repair and renovate tile roofs

Modification History

Photovoltaic (solar) panels added to range statement
Equivalent to CPCCRT3004A

Unit Descriptor

This unit of competency specifies the outcomes required to repair and renovate roof tiles to different roof structures.
It includes the preparation for and replacement and fixing of tiles to the roof.

Application of the Unit

This unit supports the attainment of skills and knowledge to repair and renovate a range of different roof structures, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied to the ***scope of work*** performed.
		1.2	***Safety (OHS)*** requirements are followed in accordance with safety plans and policies.
		1.3	Signage and barricade requirements are identified and implemented.
		1.4	Plant, ***tools and equipment*** selected to carry out tasks that are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement.
		1.5	***Materials*** quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
		1.6	Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
		1.7	***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2	Prepare roof area.	2.1	Damaged area is identified and located in accordance with job drawings and specifications.
		2.2	Fall arrest system is installed in accordance with regulatory and workplace procedures.
		2.3	Roofing materials and building component parts are safely and effectively handled using appropriate material handling techniques.
		2.4	Damaged tiles are removed to ensure minimum disturbance to remaining roof tiles.
		2.5	Pointing or mortar to be replaced is removed ensuring no damage to roof tiles.

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		2.6	Area to be repaired is left clean and free of loose waste.
		2.7	Roof battens, sarking, boarding and flashing installations are checked for soundness and adequacy and replaced in accordance with job specifications.
3	Replace roof tiles.	3.1	Roof tiles are individually examined to ensure conformity to original roof tiles.
		3.2	Mortar is mixed to required composition and job specifications.
		3.3	Roof tiles are laid to maintain conformity to gauge, level alignment and plumb, while maintaining bond to specifications.
		3.4	Roof tiles are laid to produce design features in accordance with original design and specifications.
		3.5	Mortar joints are struck to match existing colour and loose mortar is removed from roof tile surface.
4	Replace pointing material.	4.1	Pointing material is mixed to specifications.
		4.2	Pointing material is applied to ridge tile joints to specification.
		4.3	Joints are pointed to produce matching finish to existing surrounds and loose material is removed from roof tile surface.
5	Clean up.	5.1	Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
		5.2	Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- characteristics and applications of roof tiling materials
- general construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations
- processes for the calculation of material requirements
- quality requirements
- roof construction systems and structures and tiling considerations

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- roof tiling techniques and procedures and the process of repairing/renovating tiled roofs
- workplace and equipment safety requirements.

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to:
	• locate, interpret and apply of relevant information, standards and specifications
	• comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
	• comply with organisational policies and procedures, including quality requirements
	• safely and effectively use tools, plant and equipment
	• communicate and work effectively and safely with others
	• as a minimum, replace approximately 1 square metre of damaged tiles in 5 square metre of a roof frame, including appropriate tile cutting, bedding and pointing, ensuring:
	  • correct identification of requirement and installation and finishing of replacement tiles
	  • correct selection and use of appropriate processes, tools and equipment
	  • completing all work to specification.

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Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a

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period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to repair and restoration of a tiled roof
- relevant Australian standards
- safe work procedures relating to repair and restoration of a tiled roof
- signage

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- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Scope of work:

- includes replacing damaged roof tiles, including the preparation of the area, and the matching, installation and pointing of the replacement tiles
- specifications include tile colour, tile profile, type of bond, nailing sequence and wind category
- tiles may be interlocking or non-interlocking
- types of terracotta tiles include Marseille, modern French, Swiss, Spanish and French
- types of concrete tiles include Elebane, Villa, Centurian, Chateau and shingle (concrete)
- pointing material may be flexible pointing material or its equivalent.

Safety (OHS) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
- hazard control
- hazardous materials and substances, including cement and curing agents
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - photovoltaic (solar) panels
  - power cables, including overhead service trays, cables and conduits
  - restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - working at heights
  - work site visitors and the public

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- working in proximity to others
- working safely on roofs
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Tools and equipment:

- include:
  - air compressors and hoses
  - bedding frames
  - blowers
  - brooms
  - buckets
  - calculators
  - chalk lines
  - chisels
  - concrete mixers
  - elevators
  - fall safety devices
  - gutter protectors
  - hammers
  - hand saws
  - high pressure water cleaners
  - ladders
  - measuring tapes and rules
  - nail bags
  - nail guns
  - pincers
  - power drills
  - power leads
  - power saws
  - shovels
  - squares
  - string lines
  - tile cutters
  - trowels
- may include:
  - scaffolds
  - small compressors
  - small petrol or diesel engines.

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Materials include:	• adhesives • concrete and terracotta tiles • fastenings and other mechanical fixings • flashings • mortar • sarking materials • timber and metal battens.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • stormwater management • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.

Unit Sector(s)

Functional area

Unit sector Construction

Custom Content Section

Not applicable.

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CPCCRT3005B Slate a roof

Modification History

Photovoltaic (solar) panels added to range statement
Equivalent to CPCCRT3005A

Unit Descriptor

This unit of competency specifies the outcomes required to install slate to a conventional hip and valley roof.
It includes preparing for, setting out and installing slate to a roof.

Application of the Unit

This unit supports the attainment of skills and knowledge to safely slate a hip and valley roof, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied to the ***scope of work*** performed.
		1.2	***Safety (OHS)*** requirements are followed in accordance with safety plans and policies.
		1.3	Signage and barricade requirements are identified and implemented.
		1.4	Plant, ***tools and equipment*** selected to carry out tasks that are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement.
		1.5	***Materials*** quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
		1.6	Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
		1.7	***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2	Prepare roof surface.	2.1	Fall arrest system is installed to roof perimeter by regulatory and workplace requirements.
		2.2	Elevator is assembled and used in accordance with manufacturer instructions and workplace procedures.
		2.3	Roof surface is set out, sarked, boarded and battened as required by job specifications.
		2.4	Roof surface and structure are checked for stability and safe access to roof for tile installation.
		2.5	Tiles are loaded onto roof, supported and evenly distributed.

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3	Prepare slate.	3.1	Slate is graded, marked and holed to alignment requirements.
		3.2	Slate is loaded on to roof, supported and evenly distributed.
4	Lay and secure slate.	4.1	Slate is laid and secured to designed layout of gauge, bond and line.
		4.2	Ridges and hips are finished in accordance with placement of slate to specifications.
		4.3	Hip covering is installed, measured, prepared, fitted and secured to specifications.
		4.4	Roof and guttering are cleared free of waste and surplus material.
5	Clean up.	5.1	Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
		5.2	Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- characteristics and applications of slate and slating materials
- general construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- measuring and marking
- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations
- processes for the calculation of material requirements
- quality requirements

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- roof construction systems and structures and slating considerations
- slating techniques and procedures
- workplace and equipment safety requirements.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply of relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum, slate 45 square metres of a roof frame, incorporating a 1.5m hip, a 1.5m valley, a 1.5m gable and a 1.5m top ridge, including the appropriate sarking, boarding, battening, bedding and pointing, ensuring:
  - correct identification of requirement and installation and finishing of the slate
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or

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Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on

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competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to slating a roof
- relevant Australian standards
- safe work procedures relating to slating a roof
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Scope of work:

- includes preparation of a regular roof for slating by sarking, boarding and battening; and laying and securing slate

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- preparation tasks of ridge and hip covering include marking for length, cutting, folding and drilling holes for securing slate
- safety hazards include steepness of roof, flatness of roof and adequacy of footholds
- hip finishes to slate work may be mitred or covered
- groundwork for slate may be battened and felted (sarked), boarded and felted (sarked), boarded, felted (sarked) and battened and boarded, felted (sarked), counter battened and battened.

Safety (OHS) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
- hazard control
- hazardous materials and substances, including cement and curing agents
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - photovoltaic (solar) panels
  - power cables, including overhead service trays, cables and conduits
  - restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - working at heights
  - work site visitors and the public
  - working in proximity to others
  - working safely on roofs
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

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Tools and equipment:

- include:
  - air compressors and hoses
  - blocks
  - blowers
  - breaks or cutting irons
  - brooms
  - buckets
  - calculators
  - chalk lines
  - chisels
  - concrete mixers
  - elevators
  - guillotines
  - gutter protectors
  - hammers
  - hand saws
  - high pressure water cleaners
  - ladders
  - measuring tapes and rules
  - nail bags
  - nail guns
  - pincers
  - power drills
  - power leads
  - power saws
  - rippers
  - safety devices
  - shovels
  - slate cutters
  - slate reefers
  - slater's hammers
  - slating knives
  - squares
  - string lines
  - surface ladders
  - trowels
- may include:
  - scaffolds
  - small compressors

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- small petrol or diesel engines.

Materials include:

- adhesives
- cats eyes and picket ridge
- fastenings and other mechanical fixings
- finials and saddles
- flashings
- metal ridging
- mortar
- sarking materials
- slate
- terracotta and concrete ridging
- timber and metal battens.

Quality requirements include relevant regulations, including:

- Australian standards
- internal company quality policy and standards
- manufacturer specifications
- workplace operations and procedures.

Environmental requirements include:

- clean-up management
- dust and noise
- stormwater management
- vibration
- waste management.

Statutory and regulatory authorities include:

- federal, state and local authorities administering the applicable Acts, regulations and codes of practice.

Unit Sector(s)

Functional area

Unit sector Construction

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Custom Content Section

Not applicable.

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CPCCRT3006B Fix shingles to roofs and facades

Modification History

Photovoltaic (solar) panels added to range statement
Equivalent to CPCCRT3006A

Unit Descriptor

This unit of competency specifies the outcomes required to fix timber shingles or shakes to provide a waterproof covering to roofs, walls and facades.
It includes preparation for, installation and finishing of the covered surface.

Application of the Unit

This unit supports the attainment of skills and knowledge to safely fix timber shingles and shakes to roofs and walls, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied to the ***scope of work*** performed.
		1.2	***Safety (OHS)*** requirements are followed in accordance with safety plans and policies.
		1.3	Signage and barricade requirements are identified and implemented.
		1.4	Plant, ***tools and equipment*** selected to carry out tasks that are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement.
		1.5	***Materials*** quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
		1.6	Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
		1.7	***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2	Prepare roof face.	2.1	Run-off devices are installed and maintained as appropriate to the task.
		2.2	Fall arrest system is installed to roof perimeter by regulatory and workplace requirements.
		2.3	Elevator is assembled and operated in accordance with manufacturer instructions and workplace procedures.
		2.4	Roof surface is set out, sarked and boarded where required to job specifications.
		2.5	Battens are cut, fitted and fixed to line and spacing to shingle manufacturer and job specifications.
		2.6	Metal valley sheets are laid and fixed into place by

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			nailing on edge extremities.
		2.7	Protrusions for installation of flashing are prepared with covered roof surface.
3	Install shingles/shakes.	3.1	Shingles/shakes are loaded, supported and evenly distributed on roof.
		3.2	Sarking is laid below initial course of shingles/shakes to job specifications.
		3.3	Shingles/shakes are fixed in line, with spacing between and guttering overhang to standards and job specifications.
		3.4	Subsequent courses are laid with sarking and shingles fixed to standards and job specifications.
		3.5	Staggered joints are maintained with overlapping shingles/shakes to job specifications.
		3.6	Shingles/shakes are split and cut to form junctions with walls or roof surfaces.
		3.7	Valleys are finished to specifications.
		3.8	Gable ends are finished to line and specified overhang.
4	Finish hips and ridges.	4.1	Same size shingles/shakes are selected for hips and ridges.
		4.2	Edges of shingles/shakes are bevel cut to provide butt joints in capping sections.
		4.3	Hips and ridges are covered, fixed and finished to line.
5	Clad walls and facades.	5.1	Method of finishing shingles/shakes on wall or facade is identified from specifications.
		5.2	Sheathed surfaces are sheeted and fixed to framework.
		5.3	Wall or facade is set out to spacing for battens and exposure of shingles/shakes is specified.
		5.4	Sarking and shingles/shakes are fitted according to specified method for fixing.

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		5.5	Junctions are constructed at corners to specified finishes.
		5.6	Flashings are finished to job specifications.
6	Clean up.	6.1	Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
		6.2	Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- characteristics and applications of shingle/shake materials
- general construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- measuring and marking
- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations
- processes for the calculation of material requirements
- quality requirements

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- roof and facade construction systems and structures, and shingling considerations
- roof and facade shingling techniques and procedures
- workplace and equipment safety requirements.

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply of relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum, fix shingles/shakes to 8 square metres of a roof frame, incorporating a 1.5m hip, a 1.5m valley, a 1.5m gable and a 1.5m top ridge, including appropriate sarking, battening and finishing; and fixing shingles/shakes to an external wall of 8 square metres, incorporating an internal corner, including appropriate sarking, battening and finishing, ensuring:
    - correct identification of requirement and installation and finishing of the shingles

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- correct selection and use of appropriate processes, tools and equipment
- completing all work to specification.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles

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- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS

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- memos
- regulatory and legislative requirements pertaining to fixing shingles to roofs and facades
- relevant Australian standards
- safe work procedures relating to fixing shingles to roofs and facades
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Scope of work:

- includes preparation of a roof and a wall for fitting with shingles/shakes by sarking and battens, as well as fixing and finishing shingles/shakes
- shingles/shakes may be terracotta or timber
- timber shingles/shakes may be straight split, taper split or hand split and re-sawn
- groundwork for shingles/shakes on roof surfaces may be battened and sarked, board and sarked, and board, battened and sarked
- types of roof protrusions include chimneys, dormer windows, two storey insert, skylights, pipes and flues, roof ventilators and cupolas
- wall or facade covering method may be single coursing or double coursing
- joining at wall corners includes butted against boards and laced for external, laced with flashing behind for internal, and butted against timber stop for both external and internal.

Safety (OHS) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
- hazard control
- hazardous materials and substances, including cement and curing agents
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices

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- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - photovoltaic (solar) panels
  - power cables, including overhead service trays, cables and conduits
  - restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - working at heights
  - work site visitors and the public
  - working in proximity to others
  - working safely on roofs
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Tools and equipment:

- include:
  - air compressors and hoses
  - blowers
  - brooms
  - buckets
  - calculators
  - chalk lines
  - chisels
  - concrete mixers
  - cutting blades
  - elevators
  - fall safety devices
  - gutter protectors
  - hammers
  - hand saws
  - high pressure water cleaners
  - ladders
  - measuring tapes and rules
  - nail bags
  - nail guns

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- pincers
- power drills
- power leads
- power planers
- power saws
- saw stools
- shovels
- spirit levels
- squares
- string lines
- trowels
- may include:
  - scaffolds
  - small compressors
  - small petrol or diesel engines.

Materials include:

- fastenings and other mechanical fixings
- flashings
- mortar
- sarking materials
- shingles/shakes
- timber and metal battens.

Quality requirements include relevant regulations, including:

- Australian standards
- internal company quality policy and standards
- manufacturer specifications
- workplace operations and procedures.

Environmental requirements include:

- clean-up management
- dust and noise
- stormwater management
- vibration
- waste management.

Statutory and regulatory authorities include:

- federal, state and local authorities administering the applicable Acts, regulations and codes of practice.

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Unit Sector(s)

Functional area

Unit sector Construction

Custom Content Section

Not applicable.

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CPCCSC2001A Safely handle and use scaffolding tools and equipment

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to safely move, locate, inspect, service and store scaffolding together with associated tools and equipment, in order to assist project planning and ensure OHS requirements and manufacturer specifications are met.

It includes delivering, selecting, positioning and maintaining scaffolding tools and equipment.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to safely move, service and store a range of scaffolding materials and equipment, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied to the ***scope of work*** performed. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults or concerns regarding ***quality requirements*** are rectified or reported prior to commencement. 1.5. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.6. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2. Handle, sort and stack scaffolding equipment and associated tools.	2.1. Tools and equipment are safely and effectively used according to manufacturer recommendations and state or territory OHS requirements. 2.2. Scaffolding equipment is moved to specified location, applying safe manual and mechanical handling techniques. 2.3. Scaffolding equipment is sorted to suit material type and size, and stacked for ease of identification and retrieval for task sequence and job location in accordance with job specifications. 2.4. Scaffolding equipment and associated tools are protected against physical, chemical, environmental and water damage and stored clear of access ways, for ease of identification, retrieval and distribution.
3. Prepare for mechanical handling of materials.	3.1. Scaffolding equipment is stacked/banded for mechanical handling in accordance with the type of material and plant or equipment to be used. 3.2. Scaffolding equipment is loaded, unloaded, moved or located at specified location assisting the forklift driver, rigger and dogman. 3.3. Scaffolding equipment and tools are safely handled

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ELEMENT	PERFORMANCE CRITERIA
	with mechanical lifting devices.
4. Clean up.	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 4.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

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REQUIRED SKILLS AND KNOWLEDGE

Required knowledge for this unit is:

- general construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations
- processes for the calculation of material requirements
- quality requirements
- relevant Acts, regulations and codes of practice
- scaffolding equipment
- scaffolding handling techniques
- workplace and equipment safety requirements.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply of relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures, including quality requirements

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EVIDENCE GUIDE

	• safely and effectively use tools, plant and equipment • communicate and work effectively and safely with others • safely handle scaffolding equipment and associated tools for all mandatory equipment and tools specified in the range statement, following OHS regulations.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to

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EVIDENCE GUIDE

confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application

- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different

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RANGE STATEMENT

work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to handling and using scaffolding tools and equipment
- relevant Australian standards
- safe work procedures relating to handling and using scaffolding tools and equipment
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Scope of work:

- planning and preparation includes work site inspection, equipment defect identification, assessment of conditions and hazards, and determination of work requirements
- handling methods for scaffolding include manual handling; assisting the forklift driver, rigger and dogman; and basic mechanical lifting devices and gin wheels
- mechanical lifting devices include pallet trolley, forklift, barrow hoist or teleporter
- scaffolding equipment types include tubes, planks, sole boards, timber, metal, stairs, connectors and couplers, toe boards, bolts, frames, ledgers, transoms, bracing, clips and fittings, brick guards, standards, screw jacks, adjustable wheels, steel wire rope, fibre ropes, ladder beams, catch platforms, prefabricated toner scaffold, bracket scaffolds and ropes
- stacking and storage are to include pallets, stillage and banding.

Safety (***OHS***) is to be in

- emergency procedures, including extinguishing

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RANGE STATEMENT

accordance with state and territory legislation and regulations and project safety plan and may include:	fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • working at heights
	  • work site visitors and the public
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment:	• include:
	  • hammers
	  • ladders
	  • nips
	  • pallet trolleys
	  • planks, including laminated
	  • spanners
	  • spirit levels
	  • tape measures

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RANGE STATEMENT

	• may include:
	  • cutters
	  • forklifts
	  • hammer drills
	  • materials hoists
	  • shovels
	  • sledge hammers
	  • wheelbarrows.

Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCSC2002A Erect and dismantle basic scaffolding

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to erect and dismantle a range of modular scaffolding systems to provide work platforms for construction purposes.

It includes edge protection, access ways and falsework (scaffold support systems for formwork).

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to erect and dismantle a range of basic scaffolding systems, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied to the ***scope of work*** performed. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults or concerns regarding ***quality requirements*** are rectified or reported prior to commencement. 1.5. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.6. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2. Whip, tie, splice and inspect ropes.	2.1. Whipping cord and fibre rope are inspected for damage and wear. 2.2. Designated rope ends are whipped in accordance with regulations and project specifications. 2.3. Designated rope ends are spliced in accordance with regulations and project specifications. 2.4. Bends and hitches are applied and inspected in accordance with project specifications.
3. Erect scaffolding.	3.1. Purpose for scaffolding is confirmed and associated work tasks are identified. 3.2. Expected loading on scaffold and supporting structure is determined using load tables and manufacturer specifications. 3.3. Site access and egress routes are identified. 3.4. Scaffolding and components are selected and inspected, and damaged components are labelled and rejected. 3.5. Sole board/base plate is selected in accordance with regulations, legislation, codes of practice and manufacturer specifications. 3.6. Scaffolding is set out and erected in accordance with

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ELEMENT	PERFORMANCE CRITERIA
	regulatory and manufacturer requirements. 3.7. Static lines are erected and installed where specified in accordance with regulatory requirements. 3.8. Lifting device is assembled and erected where specified.
4. Inspect, repair and alter erected scaffolding.	4.1. Erected modular scaffolding is inspected for damage, corrosion, wear and compatibility. 4.2. Current use of scaffolding is checked against original design and is in accordance with regulations and specifications. 4.3. Scaffolding stability is inspected and confirmed. 4.4. Alteration or repair is carried out where specified. 4.5. Inspection log and handover is completed and dated, ready for signing by a certified scaffolder.
5. Dismantle scaffolding.	5.1. Scaffolding is isolated and appropriately signed and barricaded to ensure safe dismantling. 5.2. Scaffolding is dismantled using reverse procedure as for erection.
6. Clean up.	6.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 6.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - follow instructions
  - read and interpret:

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REQUIRED SKILLS AND KNOWLEDGE

    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to complete inspection log and handover
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- general construction terminology
- job safety analysis (JSA) and safe work method statements
- lifting devices
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations
- processes for the calculation of material requirements
- quality requirements
- relevant Acts, regulations and codes of practice
- scaffolding equipment and techniques
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to:
	• locate, interpret and apply of relevant information, standards and specifications
	• comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
	• comply with organisational policies and procedures, including quality requirements
	• safely and effectively use tools, plant and equipment
	• communicate and work effectively and safely with others
	• complete whipping, splicing, tying and inspecting of five fibre ropes in accordance with regulations
	• complete planning, erection and dismantling of a modular scaffolding system, in accordance with JSA and safe work method statements and regulations, including a minimum of:
	  • five bays with an internal and external return
	  • four lifts, including ties
	  • ladder and stair access
	  • fall and edge protection.

Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

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EVIDENCE GUIDE

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role

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EVIDENCE GUIDE

and the practical requirements of the workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS

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RANGE STATEMENT

	• memos • regulatory and legislative requirements pertaining to erecting and dismantling modular scaffolding • relevant Australian standards • safe work procedures relating to erecting and dismantling modular scaffolding • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Scope of work:	• planning and preparation includes work site inspection, equipment defect identification, assessment of conditions and hazards, and determination of work requirements • erection of scaffolding is to include placement, sequencing, squaring, levelling, tying to structure, and the reverse for dismantling • purposes of scaffolding include provision of work platforms, edge protection, access ways, falsework, grandstands and covered walkways • lifting devices include cantilevered hoists and gin wheels • establishment of footings includes review of JSA and safe work method statements to determine the bearing capacity of ground or working surfaces • whipping methods include common, west countryman, American and sail makers • splicing methods include end splice and eye splice • types of bends and hitches include clove hitch around a tube, rolling hitch around a tube, single bow line, timber hitch and half hitch around a plank, and sheet bend to another rope • alteration and repair may be required due to storm damage, accidents, misuse and process changes.
Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation • handling activities that may require the assistance of others or the use of manual or

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RANGE STATEMENT

	mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • working at heights
	  • work site visitors and the public
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment:	• include:
	  • adjustable base plates
	  • bends and hitches
	  • box spanners
	  • braces
	  • bracket scaffolds (tank and formwork)
	  • cantilevered hoists (materials only with maximum capacity of 500kg)
	  • couplers and accessories
	  • fibre ropes
	  • guard rails
	  • hammers
	  • ledgers

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RANGE STATEMENT

	• mesh guards • mid rails • modular and prefabricated scaffolds • podgers hammers • prefabricated components • scaffold belts • scaffolding planks • spirit levels • stairs or ladders • standards • steel and aluminium tubes • tape measures • torpedo levels • transoms • wire nips • wrenches • may include: • gin wheels • safety nets • shovels • spanners • static lines.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.

Unit Sector(s)

Unit sector Construction

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Functional area

Functional area

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CPCCSC3001A Erect and dismantle intermediate scaffolding

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to erect and dismantle all types of tube and coupler scaffolding systems to provide work platforms for construction purposes and all work associated with modular scaffolding systems.

It includes edge protection, access ways and falsework (scaffold support systems for formwork).

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to safely erect and dismantle all types of modular (tube and coupler) scaffolding systems, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry
CPCCSC2002A	Erect and dismantle basic scaffolding

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied to the ***scope of work*** performed. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, ***tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults or concerns regarding ***quality requirements*** are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and quality requirements. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2. Erect scaffolding.	2.1. Purpose for scaffolding is confirmed and associated work tasks are identified. 2.2. Design loading on scaffold and supporting structure is determined using load tables in accordance with appropriate limits, standards and specifications. 2.3. Site access and egress routes are identified. 2.4. Scaffolding and components are selected and inspected, and damaged components are isolated, labelled, tagged and rejected. 2.5. Sole board/base plate is selected in accordance with regulations, legislation, codes of practice and manufacturer specifications. 2.6. Scaffolding is set out and erected in accordance with regulatory and manufacturer requirements. 2.7. Fall protection and static lines, where specified, are erected and installed in accordance with regulations and manufacturer specifications. 2.8. Lifting device is assembled and erected where

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ELEMENT	PERFORMANCE CRITERIA
	specified.
3. Inspect, repair and alter erected scaffolding.	3.1. Erected tube and coupler scaffolding is inspected for damage, corrosion, wear and compatibility prior to use. 3.2. Faulty components are isolated, labelled, tagged, rejected or replaced immediately. 3.3. Current use of scaffolding is checked against original design. 3.4. Scaffolding stability is inspected and confirmed. 3.5. Alteration or repair is carried out where specified or where required to ensure regulatory compliance. 3.6. Inspection log and handover is completed and dated, ready for signing by a certified scaffolder.
4. Dismantle scaffolding.	4.1. Scaffolding is isolated and appropriately signed and barricaded to ensure safe dismantling. 4.2. Scaffolding is dismantled using reverse procedures as for erection.
5. Clean up.	5.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 5.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources

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REQUIRED SKILLS AND KNOWLEDGE

    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to complete inspection log and handover
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- general construction terminology
- job safety analysis (JSA) and safe work method statements
- lifting devices
- logbooks
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations
- processes for the calculation of material requirements
- quality requirements
- relevant Acts, regulations and codes of practice
- scaffolding equipment and techniques
- signalling methods
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply of relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- complete planning, designing, erecting and dismantling tube and coupler intermediate scaffolding, in accordance with JSA and safe work method statements and regulations, including a minimum of:
  - three bays and two lifts with an internal or external return
  - one barrow ramp
  - one spur
  - fall/edge protection.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory

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EVIDENCE GUIDE

	or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured

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EVIDENCE GUIDE

learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to erecting and dismantling

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RANGE STATEMENT

	intermediate scaffolding • relevant Australian standards • safe work procedures relating to erecting and dismantling intermediate scaffolding • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Scope of work:	• planning and preparation includes work site inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements • intermediate scaffolding includes planning, design, erection, alteration and dismantling of clip, tube and fitting scaffolding with mast climbers, cantilevers, barrow ramps, spurs, longitudinal and transverse braces, random planks, put logs and modular scaffolding • erection of scaffolding includes set out, placement, sequencing, squaring, levelling, tying to structure, securing of planks against uplift or movement and the reverse for dismantling • purposes of scaffolding include provision of work platforms, edge protection, access ways, falsework and includes grandstands and covered walkways • lifting devices include mast climbers, cantilevered hoists and gin wheels • establishment of footings includes review of JSA and safe work method statements to determine bearing capacity of ground or working surfaces • alteration and repair may be required due to storm damage, accidents, misuse and process changes.
Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation • handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor

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RANGE STATEMENT

- hazard control
- hazardous materials and substances, including cement and curing agents
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes
  - lighting
  - power cables, including overhead service trays, cables and conduits
  - restricted access barriers
  - surrounding structures
  - traffic control
  - trip hazards
  - working at heights
  - work site visitors and the public
  - working in confined spaces
  - working in proximity to others
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Tools and equipment:

- include:
  - barrow ramps
  - box spanners
  - bracket scaffolds (tank and formwork)
  - cantilevered hoists (materials only with maximum capacity of 500kg)
  - cantilevers
  - clips
  - couplers and accessories
  - gin wheels
  - hammers
  - ladders
  - perimeter safety screens and shutters
  - prefabricated components

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RANGE STATEMENT

	• ropes • scaffolding planks • spirit levels • spurs • stairs • steel and aluminium tubes • tape measures • tube and fitting scaffolding with mast climbers • may include: • modular scaffolding • shovels • spanners • static lines.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCSF2001A Handle steelfixing materials

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to handle, sort and store steelfixing materials.

It includes identification of a range of commonly used materials; planning and preparation for work; safe and effective handling, sorting and storage of steelfixing materials; and completion of clean-up activities.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to safely and effectively handle and store a range of steelfixing materials, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied to the ***scope of work*** performed. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** are selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2. Handle, sort and stack materials and components manually.	2.1. ***Materials*** and components are identified and checked for conformity to material schedule, plans, ***quality requirements*** and specifications. 2.2. Handling requirements of materials and components are identified and safe and effective handling techniques are applied. 2.3. Materials and components are sorted to suit material type and size and are stacked for ease of identification and retrieval for task sequence. 2.4. Materials and components are protected against physical damage and stacked/stored clear of trafficways. 2.5. Signage and barricades are erected where applicable to isolate stored materials from workplace traffic or access. 2.6. Dust suppression procedures are used to minimise health risk to work personnel and others.
3. Handle and remove waste safely.	3.1. Waste materials and components are handled correctly and safely according to material safety data sheets (MSDS) and requirements of regulatory authorities. 3.2. Hazardous material is identified for separate handling in accordance with regulatory requirements. 3.3. Non-toxic materials are removed using correct procedures.

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ELEMENT	PERFORMANCE CRITERIA
4. Clean up.	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 4.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- construction and steelfixing terminology

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REQUIRED SKILLS AND KNOWLEDGE

- job safety analysis (JSA) and safe work method statements
- materials storage and environmentally friendly waste management
- MSDS
- mechanical lifting techniques
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- site traffic management and storage principles
- steelfixing tools and equipment types, uses and limitations
- systems and techniques for the safe handling of materials
- types, uses, packaging arrangements and handling techniques for steelfixing materials
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply of relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools and equipment • communicate and work effectively and safely with others • individually, or as a part of a team, handle, sort and store the mandatory steelfixing materials listed in the range statement on a minimum of two occasions at two different sites • dispose of waste and excess materials according to environmental protection requirements.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include:

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EVIDENCE GUIDE

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and

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EVIDENCE GUIDE

separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to handling steelfixing materials
- relevant Australian standards
- safe work procedures relating to handling

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RANGE STATEMENT

	steelfixing materials • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Scope of work:	• steelfixing materials include wire ties, ligatures and spacer/spreader assemblies, deformed bars, plain rods, bar chairs, mesh sheets of plain bars and mesh sheets of deformed bars; and include scaffolding components, pipe sections and structural steel sections • methods of protecting stacked/stored materials include covering, tying or banding, barricades, signs and locking away (hazardous materials) • dust suppression procedures include spraying with water and covering • waste material and debris include banding straps, broken or damaged goods, cardboard, plastic, paper and loose materials.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • cutting, grinding and welding equipment
	  • lighting
	  • power equipment
	  • power leads and sources
	  • trip hazards
	  • work site visitors and the public

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RANGE STATEMENT

	• working in confined spaces • working in proximity to others • working with metals under stress • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• angle grinders • bolt cutters • general and hand power tools • measuring tapes and rules • mesh guillotines • oxy-acetylene sets and cutting attachments • reinforcement benders • tie wire reels • wire nippers.
Environmental requirements include:	• clean-up management • dust and noise • stormwater protection • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.
Materials include:	• labelling • specialist material handling gloves.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.

Unit Sector(s)

Unit sector Construction

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Functional area

Functional area

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CPCCSF2002A Use steelfixing tools and equipment

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to use steelfixing tools, plant and equipment.

It includes identification, selection and safe use of a range of commonly used steelfixing tools, plant and equipment; and storage and user maintenance of these.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to safely and effectively use a range of tools and equipment used in steelfixing on construction projects, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, ***quality requirements*** and operational details are obtained from relevant ***information***, confirmed and applied to the ***scope of work*** performed. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Materials*** quantity requirements are calculated in accordance with plans, specifications. 1.5. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.6. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2. Identify hand and power tools.	2.1. Hand and power tools and their functions, operations and limitations are identified. 2.2. OHS requirements for using hand tools are recognised and adhered to. 2.3. OHS requirements for using power tools are recognised and adhered to.
3. Select tools for project.	3.1. ***Tools and equipment*** are selected consistent with job requirements. 3.2. Tools, including leads and hoses, are checked for tags, serviceability and safety, and any faults are rectified or reported. 3.3. Power tools guards, retaining bolts, couplings, gauges and controls are checked and maintained in accordance with manufacturer recommendations. 3.4. Equipment to hold or support material during operation is selected. 3.5. Pre-operational checks, including lubricants, hydraulic fluid and water, are completed according to manufacturer recommendations.
4. Use tools.	4.1. Power and compressed air supply are connected to work area. 4.2. Start-up and shut-down procedures are followed. 4.3. Tools are safely and effectively used according to

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ELEMENT	PERFORMANCE CRITERIA
	manufacturer recommendations and OHS requirements.
	4.4. Tools are safely located when not in immediate use.
5. Select plant and equipment.	5.1. Function and limitations of plant and equipment used in steelfixing are identified.
	5.2. Plant and equipment are selected consistent with hazard minimisation and needs of job.
	5.3. Method of operation of plant and equipment is identified.
	5.4. OHS requirements for operating and using plant and equipment are recognised and adhered to.
	5.5. Plant and equipment are checked for safety and faults are rectified or reported.
6. Use plant and equipment.	6.1. Plant and equipment are safely and effectively used.
	6.2. Plant and equipment are safely located when not in immediate use.
	6.3. Plant and equipment are cleaned, maintained and stored after use.
7. Clean up.	7.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	7.2. Machinery, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - follow instructions
  - read and interpret:

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REQUIRED SKILLS AND KNOWLEDGE

    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- mathematical and numeracy skills to apply measurements and calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- steelfixing industry terminology
- systems and techniques for safe handling of materials
- types, characteristics, uses and limitations of:
  - steelfixing hand tools
  - steelfixing power tools
  - steelfixing plant and equipment
  - steelfixing materials
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply of relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • communicate and work effectively and safely with others • select, use and maintain the hand and power tools and equipment listed in the range statement • select, use and provide operator maintenance for the equipment items listed in the range statement.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements

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EVIDENCE GUIDE

- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete

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EVIDENCE GUIDE

	confidence in the person's demonstrated ability and applied knowledge • all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed. Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Information includes:	• diagrams or sketches • instructions issued by authorised organisational or external personnel • manufacturer specifications and instructions, where specified • MSDS • memos • regulatory and legislative requirements pertaining to the use of steelfixing tools and equipment

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RANGE STATEMENT

	• relevant Australian standards • safe work procedures relating to steelfixing tools and equipment • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Scope of work:	• may involve reinforcement for foundations, pits and slabs, columns, walls, stairs, plinths, kerbs, gutters, pathways and hard standings.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • cutting, grinding and welding equipment
	  • lighting
	  • power equipment
	  • power leads and sources
	  • trip hazards
	  • work site visitors and the public
	  • working in confined spaces
	  • working in proximity to others
	  • working with metals under stress
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Materials:	• include: • deformed bars

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RANGE STATEMENT

	• ligatures and spacer/spreader assemblies • mesh sheets of deformed bars • mesh sheets of plain bars • plain rods • wire ties • may include: • pipe sections • scaffolding components • structural steel sections.
Environmental requirements include:	• clean-up management • dust and noise • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.
Tools and equipment:	• include: • bolt cutters • wire nippers • tie wire reels • angle grinders • measuring tapes and rules • mesh guillotines • cutting attachments • may include: • general and hand power tools • generators for angle grinders • reinforcement benders • welding sets.

Unit Sector(s)

Unit sector Construction

Functional area

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Functional area

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CPCCSF2003A Cut and bend materials using oxy-LPG equipment

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to heat, cut and bend construction materials using oxy-LPG equipment.

It includes planning and preparation for the work, setting up and testing the equipment, cutting materials, heating and bending materials, shutdown of equipment and completion of clean-up activities.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to use oxy-LPG-acetylene equipment to cut and bend materials for steelfixing applications, which includes working with others and as a member of a team. It does not involve specialist welding techniques.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied to the ***scope of work*** performed. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, tools and ***equipment*** are selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. ***Materials*** quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2. Set up and test equipment.	2.1. Correct fire extinguisher is selected and located to be readily accessible prior to and during operations. 2.2. Regulators are attached to oxy and acetylene bottles in accordance with manufacturer specifications and OHS regulations. 2.3. Lines are purged to manufacturer recommendations prior to lighting up. 2.4. Equipment is tested for leaks and corrective action undertaken or faults reported. 2.5. Correct pressures and cutting tips are selected in accordance with material to be cut and manufacturer specifications.
3. Cut material.	3.1. Material is accurately marked and secured or clamped ready for cutting. 3.2. Torch is lit correctly and safely according to manufacturer specifications. 3.3. Setting of flame is adjusted for cutting to manufacturer recommendations. 3.4. Correct cutting position is adopted during cutting to

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ELEMENT	PERFORMANCE CRITERIA
	set-out mark.
4. Heat and bend material.	4.1. Material is accurately marked and securely clamped ready for cutting. 4.2. Torch is lit correctly and safely according to manufacturer specifications. 4.3. Heat is applied to specified material and weakening effects of the heating process are minimised. 4.4. Material is bent to specification and correctly cooled.
5. Shut down.	5.1. Torch is switched off according to manufacturer specifications. 5.2. Gas supply is shut off according to manufacturer specifications.
6. Clean up.	6.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 6.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals

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REQUIRED SKILLS AND KNOWLEDGE

- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- mathematical and numeracy skills to apply measurements and calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- construction and steelfixing terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- oxy acetylene and LPG heating and cutting equipment set-up and operating techniques
- oxy acetylene and LPG heating and cutting equipment types, characteristics, uses and limitations
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- types and properties of steelfixing materials
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply of relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools, plant and equipment • communicate and work effectively and safely with others • use both oxy-acetylene and LPG systems to cut to specification a range of bars up to and including 36mm • heat and bend a minimum of three bars to specification including at least one 36mm bar.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the

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EVIDENCE GUIDE

mandatory task requirements

- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at

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EVIDENCE GUIDE

the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to cut and bend materials using oxy/LPG equipment
- relevant Australian standards
- safe work procedures relating to cut and bend materials using oxy/LPG equipment

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RANGE STATEMENT

	• signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Scope of work:	• cutting of steel includes cutting up of waste for salvage, cutting reinforcement steel and cutting holes in plate • bending includes reinforcement steel • all work is to conform to the requirements of relevant Australian standards.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • cutting, grinding and welding equipment
	  • lighting
	  • power equipment
	  • power leads and sources
	  • trip hazards
	  • work site visitors and the public
	  • working in confined spaces
	  • working in proximity to others
	  • working with metals under stress
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Equipment includes:	• cylinders • regulators

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RANGE STATEMENT

	• gas tubing • cutting blowpipes • flint lighters • measuring tapes and rules • clamps and support stands.

Materials:	• include:
	  • cutting consumables
	  • deformed bars
	  • mesh sheets of deformed bars
	  • mesh sheets of plain bars
	  • plain rods
	• may include:
	  • pipe sections
	  • scaffolding components
	  • structural steel sections.

Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCSF2004A Place and fix reinforcement materials

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to place and fix reinforcement for concrete work as part of construction processes.

It includes planning and preparation for the work, final preparation for placement, placing and fixing reinforcement, checking the reinforcement and completing clean-up activities.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to place and fix reinforcement materials for a construction project, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, ***quality requirements*** and operational details are obtained from relevant ***information***, confirmed and applied to the ***scope of work*** performed. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, ***tools and equipment*** are selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Stock of ***reinforcement materials*** is checked for correct type, quality and quantities against reinforcement schedule and details in plans/specifications. 1.6. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2. Prepare for reinforcement placement.	2.1. Formwork is checked for completion and conformity to receive reinforcement. 2.2. Reinforcement bars are cut and bent to required set out and plans and specifications. 2.3. Bars are tied to designed configuration from plans and specifications. 2.4. Reinforcement sheets are cut to required sizes. 2.5. Stiffening rods are attached to panels as required to facilitate handling processes. 2.6. Bar chairs and spacers are located to requirements of reinforcement schedule and plans and specifications.
3. Place and fix reinforcement.	3.1. Fabric reinforcement sheets are placed into position in accordance with engineer's drawings and specifications. 3.2. Reinforcement bars are located and positioned in accordance with engineer's drawings and specifications. 3.3. Reinforcement is located and placed using bar chairs, ligatures and spacers according to engineer's drawings and specifications. 3.4. Reinforcement material is supported and secured

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ELEMENT	PERFORMANCE CRITERIA
	into position in accordance with engineer's drawings and specifications.
	3.5. Cast-in items are secured to reinforcement in accordance with engineer's drawings and specifications.
	3.6. Ends of protruding reinforcement material are covered and protected in accordance with plans and specifications.
4. Check reinforcement prior to concrete pour.	4.1. Location and position of reinforcement and fixing ties to reinforcement are checked for accuracy.
	4.2. Depth of coverage, clearance, spacing and overlap of reinforcement material are checked in accordance with engineer's drawings and job specification.
5. Clean up.	5.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	5.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools,

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REQUIRED SKILLS AND KNOWLEDGE

equipment or materials
- numeracy skills to apply calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- construction and steelfixing terminology
- job safety analysis (JSA) and safe work method statements
- job specifications related to the layout of reinforcement materials
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- reinforcement materials placement and fixing techniques
- types, properties, uses and limitations of reinforcement materials
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

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Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply of relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools, plant and equipment • communicate and work effectively and safely with others • place and fix reinforcement materials to specification on a minimum of three different jobs and involving deformed bars, rods and mesh sheets.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements

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EVIDENCE GUIDE

- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete

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EVIDENCE GUIDE

confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Quality requirements include relevant regulations, including:

- Australian standards
- internal company quality policy and standards
- manufacturer specifications
- workplace operations and procedures.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to the placement and fixing of reinforcement materials

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RANGE STATEMENT

	• relevant Australian standards • safe work procedures relating to the placement and fixing of reinforcement materials • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Scope of work:	• steelfixing may involve reinforcing concrete for foundations, pits and slabs, columns, walls, stairs, plinths, kerbs, gutters, pathways and hard standings.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • cutting, grinding and welding equipment
	  • lighting
	  • power equipment
	  • power leads and sources
	  • trip hazards
	  • work site visitors and the public
	  • working in confined spaces
	  • working in proximity to others
	  • working with metals under stress
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment:	• include:

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RANGE STATEMENT

	• bolt cutters • measuring tapes and rules • mesh guillotines • reinforcement benders • tie wire reels • wire nippers • may include: • general hand and power tools • manual metal arc welding (MMAW) machines • oxy-acetylene setting and cutting attachments.
Reinforcement materials:	• include: • bar chairs • deformed bars • ligatures • mesh sheets of deformed bars • mesh sheets of plain bars • plain rods • spacer/spreader assemblies • wire ties • may include: • pipe sections • scaffolding components • structural steel sections.
Environmental requirements include:	• clean-up management • dust and noise • stormwater protection • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.

Unit Sector(s)

Unit sector Construction

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Functional area

Functional area

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CPCCSF2005A Arc weld reinforcement steel

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to arc weld reinforcement to non-load bearing structural components forming part of the construction process.

It includes planning and preparation for the work, setting up for welding, welding the reinforcement, checking the reinforcement, and completing clean-up activities.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to perform arc welding on reinforcement steel in a construction project, which includes working with others and as a member of a team. It does not involve specialist welding techniques.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied to the ***scope of work*** performed. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, ***tools and welding equipment*** are selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. ***Materials*** quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2. Prepare for welding reinforcement.	2.1. Appropriate welding method and material are identified and selected in relation to job and site specifications. 2.2. Area is cleaned of flammable material and barriers are erected to eliminate potential hazards. 2.3. Mill scale and loose residual debris are removed from reinforcement prior to welding.
3. Weld reinforcement.	3.1. Reinforcement is welded to specifications, instructions and job requirements. 3.2. Tack welds are conducted to meet specifications relating to the diameter of the bar. 3.3. Welding is conducted to the required distance from bends or re-bends of reinforcement bars.
4. Check reinforcement prior to use.	4.1. Location and position of reinforcement and fixing ties are checked for accuracy. 4.2. Depth of coverage, clearance, spacing and overlap are checked before use.
5. Clean up.	5.1. Work area is cleared and materials disposed of,

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ELEMENT	PERFORMANCE CRITERIA
	reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	5.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- mathematical and numeracy skills to apply measurements and calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- construction arc welding terminology

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REQUIRED SKILLS AND KNOWLEDGE

- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- mechanical lifting techniques
- manual metal arc welding (MMAW) equipment types, characteristics, uses and limitations
- MMAW set-up, operating and welding sequence and techniques
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- types and properties of materials to be welded
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply of relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools, plant and equipment • communicate and work effectively and safely with others • for a minimum of five separate tasks, arc weld reinforcement steel materials, as listed in the range statement, to specification.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions

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EVIDENCE GUIDE

- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability

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EVIDENCE GUIDE

and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to arc welding of reinforcement steel
- relevant Australian standards
- safe work procedures relating to arc welding of reinforcement steel
- signage
- verbal, written and graphical instructions

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RANGE STATEMENT

	• work bulletins • work schedules, plans and specifications.
Scope of work:	• welding is to be conducted using MMAW equipment • reinforcing material to be welded includes deformed bars, plain rods, mesh sheets of plain bars and mesh sheets of deformed bars • welding is to conform to relevant Australian standard.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • cutting, grinding and welding equipment
	  • lighting
	  • power equipment
	  • power leads and sources
	  • trip hazards
	  • work site visitors and the public
	  • working in confined spaces
	  • working in proximity to others
	  • working with metals under stress
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and welding equipment include:	• angle grinders • bolt cutters • measuring tapes and rules

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RANGE STATEMENT

	• mesh guillotine • reinforcement benders • tie wire reels • wire nippers.

Materials:	• include:
	  • bar chairs
	  • deformed bars
	  • ligatures and spacer/spreader assemblies
	  • mesh sheets of deformed bars
	  • mesh sheets of plain bars
	  • plain rods
	  • welding consumables
	  • wire ties
	• may include:
	  • pipe sections
	  • scaffolding components
	  • structural steel sections.

Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCSF2006A Machine cut reinforcement materials

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to machine cut reinforcement material components that form part of the construction process.

It includes preparation and planning for the work, set up of the machine, cutting of the reinforcing materials and completion of clean-up activities.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to cut reinforcement materials with machine cutting equipment for a construction project, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. ***Cutting machine*** and ***tools and equipment*** are selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement.
	1.5. ***Materials*** quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
	1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2. Set up for cutting.	2.1. Appropriate cutting method is identified and selected, in relation to the job specification and site conditions.
	2.2. Area is cleaned of flammable material and barriers are erected to contain waste material from cutting process.
	2.3. Secure and safe work environment with stable base and platform is provided for the reinforcing material.
	2.4. Cutting machine is set up for operation in accordance with manufacturer and job specifications.
3. Cut reinforcement steel.	3.1. Cutting machine is operated safely in accordance with manufacturer recommendations.
	3.2. Reinforcement steel is cut or docked to prescribed lengths and configurations as per job specifications.
	3.3. Fabric reinforcement is cut to ensure allowances for element penetrations.
	3.4. Cut lengths are stacked and bundled for inclusion to reinforcing layout.

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ELEMENT	PERFORMANCE CRITERIA
	3.5. Area is cleaned of waste products to allow for next process as required.
4. Clean up.	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	4.2. Machinery, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- mathematical and numeracy skills to apply measurements and calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

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REQUIRED SKILLS AND KNOWLEDGE

Required knowledge for this unit is:

- construction and steelfixing terminology
- job safety analysis (JSA) and safe work method statements
- machine cutting equipment set-up and operating techniques
- machine cutting equipment types, uses and limitations
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- types and properties of steelfixing materials
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply of relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safe and effective operational use of machinery, tools, plant and equipment
- communicate and work effectively and safely with others
- machine cut a range of reinforcement steel materials using a guillotine shear/cropper and a minimum of one other mechanical device.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions

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EVIDENCE GUIDE

- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability

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EVIDENCE GUIDE

and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to machine cutting of reinforcement materials
- relevant Australian standards
- safe work procedures relating to machine cutting of reinforcement materials
- signage
- verbal, written and graphical instructions

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RANGE STATEMENT

	• work bulletins • work schedules, plans and specifications.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • cutting, grinding and welding equipment
	  • lighting
	  • power equipment
	  • power leads and sources
	  • trip hazards
	  • work site visitors and the public
	  • working in confined spaces
	  • working in proximity to others
	  • working with metals under stress
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Cutting machines:	• include:
	  • angle grinder
	  • guillotine shear/cropper
	• may include:
	  • diamond tipped or carbide tipped radial saw
	  • friction disc saw (static bench fold or manual handheld grinding friction disc).

Tools and equipment include:	• angle grinders

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RANGE STATEMENT

	• bolt cutters • general hand and power tools • measuring tapes and rules • tie wire reels • wire nippers.

Materials:	• include:
	  • cutting consumables
	  • deformed bars
	  • mesh sheets of deformed bars
	  • mesh sheets of plain bars
	  • plain rods
	• may include:
	  • pipe sections
	  • scaffolding components
	  • structural steel sections.

Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCSF2007A Splice and anchor using mechanical methods

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to mechanically splice and anchor for reinforcement in concrete.

It includes planning and preparation for the work, splicing and anchoring and completing clean-up activities

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to safely use mechanical methods to splice and anchor materials in a steelfixing project, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied to the ***scope of work*** performed. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, ***tools and equipment*** are selected to carry out tasks and are consistent with the requirements of the job, checked for serviceability, and any faults are rectified or reported prior to commencement. 1.5. ***Materials*** quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2. Carry out mechanical splicing and anchoring.	2.1. Reinforcement bars are threaded as detailed in job specifications. 2.2. Detail of splicing arrangement is configured as per job specifications. 2.3. Splicing couplers are fitted and secured to reinforcing bar in accordance with manufacturers' handling instructions and job specifications. 2.4. Reinforcement is secured in accordance with prescribed tolerances. 2.5. Coupler connections and reinforcing bars are freed of mill scale and residual debris that may foul connections. 2.6. Reinforcement is located and anchored as prescribed in job specifications and relevant standards.
3. Check reinforcement prior to use.	3.1. Location and position of reinforcement and fixing ties to reinforcement are checked for accuracy. 3.2. Depth of coverage, clearance, spacing and overlap of reinforcement material are checked for conformance with job specifications and relevant standards.

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ELEMENT	PERFORMANCE CRITERIA
4. Clean up.	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 4.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- mathematical and numeracy skills to apply measurements and calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

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REQUIRED SKILLS AND KNOWLEDGE

- basic theory related to mechanical splicing and anchoring as a reinforcement technology
- construction and steelfixing tensioning terminology
- factors affecting concrete bonding, curing and strength
- handling, storage and environmentally friendly waste management
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- mechanical anchoring systems, materials and techniques
- mechanical splicing systems, materials and techniques
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply of relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools, plant and equipment • communicate and work effectively and safely with others • complete the full mechanical splicing and anchoring cycle on a minimum of three occasions covering foundations, a slab and one other structure.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements

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EVIDENCE GUIDE

- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete

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EVIDENCE GUIDE

confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to splicing and anchoring using mechanical methods
- relevant Australian standards
- safe work procedures relating to splicing and anchoring using mechanical methods
- signage

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RANGE STATEMENT

	• verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Scope of work:	• mechanical splicing and anchoring used in reinforcement in foundations, pits and slabs, columns, walls, stairs, plinths, kerbs, gutters, pathways and hard standings.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • cutting, grinding and welding equipment
	  • lighting
	  • power equipment
	  • power leads and sources
	  • trip hazards
	  • work site visitors and the public
	  • working in confined spaces
	  • working in proximity to others
	  • working with metals under stress
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment:	• include:
	  • bolt cutters
	  • couplers
	  • mechanical cutting equipment
	  • nippers

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RANGE STATEMENT

	• tool belts • measuring tapes • may include: • electric cold cut-off saw • oxy-acetylene equipment and metal inert gas (MIG), tungsten inert gas (TIG) and manual metal arc welding (MMAW) equipment.
Materials include:	• labelling • specialist material handling gloves.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCSF3001A Apply reinforcement schedule

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to interpret the reinforcement schedule and use it to confirm and locate materials to support construction activities.

It includes planning and preparation for work, reading and interpretation of the schedule, and use of the schedule to confirm materials, locate materials for construction use and provide information to others on site.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to interpret and use reinforcement schedule information in a construction project, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied to the scope of work performed. 1.2. Reinforced concrete construction schedule is identified from project schedule. 1.3. Elements of structure are identified from project construction schedule and job drawings. 1.4. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.5. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2. Read and interpret schedule.	2.1. Structural element to be constructed is confirmed from site and structural detail drawings. 2.2. Reinforcement schedule is read to identify the appropriate reinforcement type for the structural element. 2.3. Number of reinforcement pieces/sheets is identified from structural detail drawings. 2.4. Reinforcement schedule is read to identify coding and number related to labels. 2.5. Discrepancies in coding and numbering are identified and situation is reported to schedule contact for clarification.
3. Check contents of bundles.	3.1. Content of reinforcement material bundles is checked for conformity to schedule and proposed structural element. 3.2. Discrepancies between the schedule and actual material quantities are investigated and resolved or reported. 3.3. Discrepancies between the schedule and actual material shape, size or length are investigated and resolved or reported. 3.4. Cranked or bent items of reinforcement are identified, segregated and reported. 3.5. Schedule is marked where content conforms to schedule and structural element's requirements.
4. Locate reinforcement for element	4.1. Reinforcement is marked or placed and noted ready

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ELEMENT	PERFORMANCE CRITERIA
construction.	for transportation to element location. 4.2. Reinforcement is directed to structural location for placement and fixing.
5. Communicate schedule information.	5.1. Job sequencing schedule detail is communicated to steel fixers and team members to ensure efficient work practices. 5.2. Changes to job sequencing schedule are recorded as per site requirements. 5.3. Work completion procedures are identified and relevant personnel notified when finished, as per site requirements.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - communicate job sequencing schedule detail to steel fixers
  - determine requirements
  - follow instructions
  - notify completion of work
  - read and interpret:
    - construction and reinforcement schedule
    - documentation from a variety of sources
    - drawings and specifications
  - report discrepancies and faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record changes to job sequencing schedule detail
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- mathematical and numeracy skills to apply measurements and calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a

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REQUIRED SKILLS AND KNOWLEDGE

range of cultural and ethnic backgrounds and with varying physical and mental abilities

- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- construction and steelfixing terminology
- construction site traffic control and signage arrangements
- conventional symbols, markings and numbering systems relevant to reinforcement schedules
- job safety analysis (JSA) and safe work method statements
- presentation and contents of reinforcement schedules
- presentation and general content of typical construction schedules
- quality requirements
- reinforcement material types, appearance standards, packaging and labelling arrangements
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply of relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools and equipment
- communicate and work effectively and safely with others
- for a minimum of two different sites:
  - confirm the reinforcement material to the schedule
  - direct the location of the reinforcement materials for element construction
  - communicate schedule information and variations to steel fixers.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement

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EVIDENCE GUIDE

- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete

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EVIDENCE GUIDE

confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to the application of reinforcement schedules
- relevant Australian standards
- safe work procedures relating to the application of reinforcement schedules
- signage

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RANGE STATEMENT

	• verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.

Reinforced concrete construction schedule:	• information includes:
	  • grade of steel reinforcing
	  • length of material
	  • location for material, size and shape of bars
	  • number of bars in a bundle
	  • shape of formed bars
	  • size of mesh
	  • surface markings
	  • type of steel bars, cranks and bends
	• structural elements include:
	  • beams
	  • columns
	  • footings
	  • slabs
	  • walls.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • lighting
	  • power equipment
	  • power leads and sources
	  • trip hazards
	  • work site visitors and the public
	  • working in confined spaces

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RANGE STATEMENT

	• working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Environmental requirements include:	• clean-up management • dust and noise • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCSF3002A Carry out monostrand post-tensioning

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to carry out monostrand post-tensioning in accordance with specifications.

It includes planning and preparation for the work, laying and fixing anchorages and cables, defining the work area, stressing tendons, finishing the tensioning and completing clean-up activities.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to tension monostrand posts for a construction project, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied to the ***scope of work*** performed.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. ***Tools and equipment*** are selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement.
	1.5. ***Materials*** quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
	1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2. Lay and fix anchorages and cables.	2.1. Tendons and recess formers are fixed in location according to job plans and drawings.
	2.2. Ducting profile is laid and specified number of strands pushed through and verified according to job drawings.
	2.3. Profile anchorages are positioned to specifications.
	2.4. Form head and anchorages are positioned in accordance with specifications.
	2.5. Installed cables are inspected in accordance with specifications and relevant standards.
	2.6. Grout tubes are fixed in accordance with manufacturer and engineer's specifications.
	2.7. Grout tubes are monitored during concrete pour.
3. Define the work area.	3.1. Safe working area is defined according to safe work practices and OHS regulations.
	3.2. Barricades and signage are erected where required to isolate safe work areas.
4. Stress tendons.	4.1. Recess formers are removed.

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ELEMENT	PERFORMANCE CRITERIA
	4.2. Anchor blocks and wedges are set up to manufacturers' design.
	4.3. Stressing operations are carried out to nominated loads and to engineer standards using authorised calibrated stressing equipment.
	4.4. Extensions are measured and recorded on standard forms for approval by the engineer.
5. Finish the tensioning.	5.1. Protruding strands are cut and sealed according to manufacturer specifications.
	5.2. Cement grout is mixed and pumped in accordance with the specifications and relevant standards.
6. Clean up.	6.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	6.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record extensions
- identifying and accurately reporting to appropriate personnel any faults in tools,

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REQUIRED SKILLS AND KNOWLEDGE

equipment or materials

- mathematical and numeracy skills to apply measurements and calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- basic theory related to cable stressing as a reinforcement technology
- calibration procedures related to stressing techniques and equipment
- construction and steelfixing tensioning terminology
- factors affecting concrete bonding, curing and strength
- grouting equipment and procedures
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- requirements and processes for recording stressing operations
- safe stressing procedures and monostrand techniques
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply of relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools and equipment
- communicate and work effectively and safely with others
- carry out the full monostrand post-tensioning cycle to specification, covering:
  - five strand tendon
  - a minimum of thirty metres
  - standard tensioning
  - completion of site tensioning documentation.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement

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EVIDENCE GUIDE

- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with

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EVIDENCE GUIDE

a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to monostrand post-tensioning
- relevant Australian standards
- safe work procedures relating to monostrand post-tensioning

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RANGE STATEMENT

	• signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Scope of work:	• monostrand post-tensioning is designed to replace standard reinforcement materials with cables and through tensioning, and provide required strength in a reduced thickness of concrete • post-tensioning plans will contain position of cables, height of chairs, cable specifications, number of strands per cable and the stressing loads • monostrand is a single cable with a standard seven wire strand with sizes ranging from 12.7mm to 15.2mm • tensioning is stipulated in the job specifications but is not to exceed 85% of the ultimate tensile strength of the cable • types of structural elements include slabs, beams, columns and ground anchors • types of structures include buildings, bridges, towers, tanks, silos, stayed structures, offshore platforms, and underground and submerged structures • work is to conform to relevant Australian standard, unless this is replaced by superior specifications.
Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation • handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor • hazard control • hazardous materials and substances, including cement and curing agents • organisational first aid • PPE prescribed under legislation, regulations and workplace policies and practices • safe operating procedures, including the conduct of operational risk assessment and

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RANGE STATEMENT

	treatments associated with: • cutting and grinding equipment • lighting • power equipment • power leads and sources • trip hazards • work site visitors and the public • working in confined spaces • working in proximity to others • working with cables under stress • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• angle grinders (power) • grouting equipment • hacksaws • hammers • hydraulic power packs • measuring tapes and rules • monostrand jacks • nips • spanners • staple guns • steelfixing reels.
Materials include:	• labelling • specialist material handling gloves.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.

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Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCSF3003A Carry out multistrand post-tensioning

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to carry out multistrand post-tensioning in accordance with specifications.

It includes planning and preparation for the work, laying and fixing anchorages and cables, defining the work area, stressing tendons, finishing tensioning, and completing clean-up activities.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to tension multistrand posts for a construction project, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied to the ***scope of work*** performed.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. ***Tools and equipment*** are selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement.
	1.5. ***Materials*** quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
	1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2. Lay and fix anchorages and cables.	2.1. Tendons and recess formers are fixed in location according to job plans and drawings.
	2.2. Ducting profile is laid and specified number of strands pushed through and verified according to job drawings.
	2.3. Profile anchorages are positioned to specifications.
	2.4. Form head and anchorages are positioned in accordance with specifications.
	2.5. Installed cables are inspected in accordance with specifications and relevant standards.
	2.6. Grout tubes are fixed in accordance with manufacturer and engineer's specifications.
	2.7. Grout tubes are monitored during concrete pour.
3. Define the work area.	3.1. Safe working area is defined according to safe work practices and OHS regulations.
	3.2. Barricades and signage are erected where required to isolate safe work areas.
4. Stress tendons.	4.1. Recess formers are removed.

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ELEMENT	PERFORMANCE CRITERIA
	4.2. Anchor blocks and wedges are set up to manufacturers' design.
	4.3. Stressing operations are carried out to nominated loads and to engineer standards using authorised calibrated stressing equipment.
	4.4. Extensions are measured and recorded on standard forms for approval by the engineer.
5. Finish the tensioning.	5.1. Protruding strands are cut and sealed according to manufacturer specifications.
	5.2. Cement grout is mixed and pumped in accordance with the specifications and relevant standards.
6. Clean up.	6.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	6.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record extensions
- identifying and accurately reporting to appropriate personnel any faults in tools,

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REQUIRED SKILLS AND KNOWLEDGE

equipment or materials

- mathematical and numeracy skills to apply measurements and calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- basic theory related to cable stressing as a reinforcement technology
- calibration procedures related to stressing techniques and equipment
- construction and steelfixing tensioning terminology
- factors affecting the concrete bonding, curing and strength
- grouting equipment and procedures
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- requirements and processes for recording stressing operations
- safe stressing procedures and multistrand techniques
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply of relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools and equipment
- communicate and work effectively and safely with others
- carry out the full multistrand post-tensioning cycle to specification covering:
  - a multistrand cable of at least fifteen strands
  - a minimum of thirty metres
  - standard tensioning
  - completion of site tensioning documentation.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

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EVIDENCE GUIDE

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and

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EVIDENCE GUIDE

separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to multistrand post-tensioning
- relevant Australian standards
- safe work procedures relating to multistrand

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RANGE STATEMENT

	post-tensioning • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Scope of work:	• multistrand post-tensioning is designed to replace standard reinforcement materials with cables and, through tensioning, provide required strength in a reduced thickness of concrete • post-tensioning plans will contain position of cables, height of chairs, cable specifications, number of strands per cable, and the stressing loads • multistrand cable contains at least fifteen wire strands with sizes ranging from 12.7mm to 15.2mm • tensioning is stipulated in the job specifications but is not to exceed 85% of the ultimate tensile strength of the cable • types of structural elements include slabs, beams, columns and ground anchors • types of structures include buildings, bridges, towers, tanks, silos, stayed structures, offshore platforms and underground and submerged structures • work is to conform to relevant Australian standard, unless this is replaced by superior specifications.
Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation • handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor • hazard control • hazardous materials and substances, including cement and curing agents • organisational first aid • PPE prescribed under legislation, regulations and workplace policies and practices • safe operating procedures, including the

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RANGE STATEMENT

	conduct of operational risk assessment and treatments associated with: • cutting and grinding equipment • lighting • power equipment • power leads and sources • trip hazards • work site visitors and the public • working in confined spaces • working in proximity to others • working with cables under stress • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• angle grinders (power) • grouting equipment • hacksaws • hammers • hydraulic power packs • measuring tapes and rules • multistrand jacks • nips • spanners • staple guns • steelfixing reels.
Materials include:	• labelling • specialist material handling gloves.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.

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Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCSF3004A Carry out stressbar post-tensioning

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to carry out stressbar post-tensioning in accordance with specifications.

It includes planning and preparation for the work; placing and inspecting bars, components and ducts; defining the work area; stressing bars; finishing the tensioning; and completing clean-up activities.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to tension stressbar posts for a construction project, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied to the ***scope of work*** performed. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** are selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. ***Materials*** quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2. Place and inspect bar, fit components and seal ducts.	2.1. Bar and components are placed and fitted according to manufacturer specifications and job instructions. 2.2. Bar layout is inspected for compliance with job specifications and relevant standards. 2.3. Ducts are sealed in accordance with manufacturer specifications.
3. Define the work area.	3.1. Safe work area is defined according to safe work practice and OHS regulations. 3.2. Barricades and signage are erected where required to isolate safe work areas.
4. Stress bars.	4.1. Stressing jack and accessories are placed and stressing is carried out in accordance with manufacturer and engineer's specifications. 4.2. Nuts are tightened and locked off during stressing procedure in accordance with normal stressing safety standards. 4.3. Extensions are measured and recorded on standard quality assurance forms for approval by engineer.

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ELEMENT	PERFORMANCE CRITERIA
5. Finish the tensioning.	5.1. Anchorages are sealed to prevent grout loss. 5.2. Cement grout is mixed and pumped in accordance with the specifications and relevant standards.
6. Clean up.	6.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 6.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record extensions
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- mathematical and numeracy skills to apply measurements and calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones

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REQUIRED SKILLS AND KNOWLEDGE

- voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- basic theory related to bar stressing as a reinforcement technology
- calibration procedures related to stressing techniques and equipment
- construction and steelfixing tensioning terminology
- factors affecting concrete bonding, curing and strength
- grouting equipment and procedures
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- requirements and processes for recording stressing operations
- safe stressing procedures and stressbar techniques
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply of relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools and equipment
- communicate and work effectively and safely with others
- carry out a minimum of two stressbar post-tensioning cycles to specification, covering:
  - two different bar sizes
  - a minimum of thirty metres
  - standard tensioning
  - completion of site tensioning documentation.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

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EVIDENCE GUIDE

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and

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EVIDENCE GUIDE

separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to stressbar post-tensioning
- relevant Australian standards
- safe work procedures relating to stressbar

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RANGE STATEMENT

	post-tensioning • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Scope of work:	• stressbar post-tensioning is designed to replace standard reinforcement materials with metal bars and, through tensioning, provide required strength in a reduced thickness of concrete • tensioning plans will contain position of bars, height of chairs, bar specifications, coupling arrangements for bars and stressing loads • stressbar sizes range from 16.0mm to 75.0mm • tensioning is stipulated in the job specifications but is not to exceed 85% of the ultimate tensile strength of the bar • types of structural elements include slabs, beams, columns, stay cable hangers, tension piles and caissons, stressed deck planks, ground anchors and soil nails • types of structures include buildings, bridges, towers, tanks, silos, stayed structures, offshore platforms, and underground and submerged structures • work is to conform to relevant Australian standard, unless this is replaced by superior specifications.
Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation • handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor • hazard control • hazardous materials and substances, including cement and curing agents • organisational first aid • PPE prescribed under legislation, regulations and workplace policies and practices • safe operating procedures, including the conduct of operational risk assessment and treatments associated with:

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RANGE STATEMENT

	• cutting and grinding equipment • lighting • power equipment • power leads and sources • trip hazards • work site visitors and the public • working in confined spaces • working in proximity to others • working with bars under stress • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• angle grinders (power) • bar jacks • couplers • grouting equipment • hacksaws • hammers • hydraulic power packs • measuring tapes and rules • nips • spanners • staple guns • steelfixing reels.
Materials include:	• labelling • specialist material handling gloves.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.

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Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCSH2001A Prepare surfaces

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit specifies the outcomes required to restore, repair and prepare different material surfaces. It includes planning and preparation for the work, preparation of new or uncoated surfaces, preparation of previously coated surfaces and completion of clean-up activities.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills and knowledge to prepare a range of shop and office surfaces for painting, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied. 1.8. Finishes to be applied to all surfaces are identified in accordance with job requirements and manufacturer specifications.
2. Prepare new or uncoated surfaces.	2.1. Suitability of ***surface*** is determined in accordance with manufacturer recommendations and job specifications. 2.2. ***Surface preparation method*** is correctly selected in accordance with the environment, finish and substrate requirements. 2.3. Surface is prepared to manufacturer specifications in compliance with substrate requirements, specifications and relevant standards. 2.4. Surface imperfections are stopped, filled and sanded to required finish in accordance with manufacturer recommendations and job specifications.
3. Prepare previously coated surfaces.	3.1. Condition and nature of ***existing substrate and surface*** material are determined and tested in accordance with relevant standards. 3.2. Potential hazards are identified and correct procedures are used to reduce risks in accordance

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ELEMENT	PERFORMANCE CRITERIA
	with manufacturer recommendations and job specifications.
	3.3. Surface preparation method is correctly selected in accordance with the environment, finish and substrate requirements.
	3.4. Surfaces are prepared by removing unwanted coatings and loose debris.
	3.5. Surface defects are repaired and imperfections stopped, filled and sanded to smooth finish ready for required finish in accordance with manufacturer recommendations and job specifications.
4. Clean up.	4.1. Waste and unwanted materials are removed and placed into job waste bins or rubbish stockpile in accordance with sound work practices and compliance with environmental requirements.
	4.2. Tools and equipment are cleaned and stored safely and effectively to manufacturer specifications.
	4.3. Unused materials are sealed and stored/stacked in accordance with standard material handling practices and techniques and company requirements.
	4.4. Work area is cleared and materials disposed of or recycled in a manner to avoid spontaneous combustion in accordance with legislation, regulations, codes of practice and job specifications.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions

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REQUIRED SKILLS AND KNOWLEDGE

- read and interpret drawings, specifications and documentation from a variety of sources
- use and interpret non-verbal communication
- use language and concepts appropriate to cultural differences
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply calculations
- organisational skills, including the ability to plan and set-out work
- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- corrosion processes and techniques for the protection of metals
- hazards associated with lead, asbestos, solvents, chemicals and dust
- interpretation of plans, drawings and specifications
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials handling and environmentally friendly waste management processes
- prevention and rectification procedures for surface coating defects
- procedures, products and techniques associated with preparation of surfaces
- processes for the calculation of material requirements
- properties and surface preparation requirements of new substrates
- surface coating technology
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to prepare all surfaces listed in the range statement for finishing, providing evidence of the ability to:
	• locate, interpret and apply relevant information, standards and specifications
	• comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
	• comply with organisational policies and procedures, including quality requirements
	• safely and effectively use tools, plant and equipment
	• communicate and work effectively and safely with others
	• prepare to specification a minimum of four surfaces:
	  • one being a new gyprock surface
	  • three being previously coated surfaces with one being an external timber surface, one an internal surface and one a metal or masonry surface.

Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements.

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EVIDENCE GUIDE

Resource implications for assessment include:

- drawings and documentation relevant to activities
- materials relevant to proposed activities
- range of surfaces for painting preparation
- tools and equipment appropriate to required tasks.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language,

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EVIDENCE GUIDE

literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to the preparation of surfaces for painting
- relevant Australian standards
- safe work procedures relating to the preparation of surfaces for painting
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Planning and preparation include:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- equipment defect identification
- work site inspection.

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RANGE STATEMENT

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • electrical fires and/or explosion from combustible materials
	  • falling objects
	  • manual handling
	  • solvents, lead, asbestos, chemicals, fumes and gases
	  • work site visitors and the public
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment include:	• drop sheets • duster brushes • filling knives and blades • hammers • hand sanders • heat removal equipment • mechanical sanders • nail punches • putty knives • scrapers • water blasters • wire brushes.

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RANGE STATEMENT

Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications where specified • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • stormwater protection • waste management.
Statutory and regulatory authority includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Surfaces include:	• horizontal or vertical • inclined or curved • internal or external • timber, metal, masonry, concrete or plaster.
Surface preparation method includes:	• chemical stripping • grinding • sanding • scraping (mechanical and hand) • use of heat guns • washing down • water blasting.

Existing substrate and surface may be contaminated with:	• dust
	• films of grease
	• mild chalking
	• mild efflorescence
	• mould
	• paint films, which are:
	  • blistering
	  • flaking
	  • peeling
	  • cracking
	• smoke damage.

Unit Sector(s)

Unit sector Construction

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Functional area

Functional area

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CPCCSH2002A Use aluminium sections for fabrication

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit specifies the outcomes required to use aluminium sections in fabricated structures and the methods of joining the sections.

Application of the Unit

Application of the unit This unit of competency supports the achievement of skills and knowledge to use aluminium sections for fabrication, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare work.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental protection requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2. Identify extruded aluminium sections.	2.1. Types of ***aluminium sections*** are identified for sectional size and design. 2.2. Uses of various sections are recognised consistent with their specific design.
3. Identify methods of joining sections.	3.1. Characteristics of sections are identified for method of ***joining***. 3.2. Securing of joints is identified with types of sections.
4. Use sections to construct frames.	4.1. Aluminium sections designed for frames are set out and prepared for joining. 4.2. Door and sash type sections are set out and prepared for joining. 4.3. Joints are made and secured to structural design requirements.
5. Clean up.	5.1. Work area is cleaned and waste material disposed of safely. 5.2. Tools and equipment are cleaned, maintained and stored.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret drawings and specifications
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- numeracy skills to apply measurements
- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- design and use of aluminium extrusions
- interpretation of workshop drawings
- job safety analysis (JSA) and safe work method statements
- measuring and marking processes related to aluminium fabrication
- types and performance of materials relevant to aluminium fabrication work
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to identify six and assemble four different types of aluminium extruded sections, providing evidence of the ability to:

- comply with OHS regulations applicable to workplace operations
- display compliance with organisational policies and procedures, including quality assurance requirements within the context of aluminium fabrication
- identify designed purpose of six separate aluminium sections
- identify methods of joining different sections
- demonstrate sound and safe techniques in preparing component sections for joining
- demonstrate safe and effective application in the fitting and securing of four different types of construction joints
- display safe and effective handling applications to minimise opportunities for damage of material surfaces
- communicate with others to ensure safe and effective workplace operations.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory

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EVIDENCE GUIDE

or Australian standards' requirements.

Resource implications for assessment include:

- workshop location
- tools and equipment appropriate to required tasks
- materials relevant to proposed activities
- drawings and documentation relevant to activities.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability

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EVIDENCE GUIDE

and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

1.1. ***Information*** includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets
- memos
- regulatory and legislative requirements pertaining to the use of aluminium sections in fabrication
- relevant Australian standards
- safe work procedures relating to the use of aluminium sections in fabrication
- signage
- verbal, written and graphical instructions

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RANGE STATEMENT

	• work bulletins • work schedules, plans and specifications.
1.2. ***Planning and preparation*** include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

1.3. ***Safety*** (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

1.4. ***Tools and equipment*** include:	• air compressor and hoses • docking saws • files • grinders • hammers • measuring tapes and rules • power drills • power leads • screwdrivers • squares.

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RANGE STATEMENT

1.5. ***Quality requirements*** include:	• control of handling procedures
	• fabrication procedures
	• quality of materials
	• relevant regulations, including:
	  • Australian standards
	  • internal company quality policy and standards
	  • manufacturer specifications where specified
	  • workplace operations and procedures
	• use and maintenance of equipment
	• workplace operations and procedures.

1.6. ***Materials*** include:	• aluminium sheets • rivets.
1.7. ***Environmental protection requirements*** include:	• clean-up management • dust and noise • stormwater protection • waste management.
1.8. ***Statutory and regulatory authority*** includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
1.9. ***Aluminium sections*** are those designed for the fabrication of:	• door and window frames • doors (swing, slide and revolving type) • partitions • sashes • screens • shopfront components • wet area unit components.
1.10. ***Joining*** may involve:	• cutting for joint • cutting to length • drilling holes • punching holes • trimming for fit.

Unit Sector(s)

Unit sector Construction

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Functional area

Functional area

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CPCCSH2003A Apply and install sealant and sealant devices

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit specifies the outcomes required to apply sealants and sealant devices to structures.

Application of the Unit

Application of the unit This unit of competency supports the achievement of skills and knowledge to apply and install sealant and sealant devices, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Sealant material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2. Prepare surface to receive sealants.	2.1. Surface is cleaned free of contaminants such as oil, grease, dust or moisture. 2.2. Surface is prepared by sanding and/or cleaning in accordance with preparation specifications.
3. Apply sealant.	3.1. ***Sealant materials*** are ***applied*** to manufacturer recommendations and specifications. 3.2. Care is taken to ensure no air is trapped within applied sealant. 3.3. Surfaces are aligned and fixings correctly installed to specifications.
4. Install sealant devices.	4.1. ***Sealant devices*** are fitted securely to specified positions. 4.2. Assistance is provided to secure installation of fixtures, assuring level and plumb to line.
5. Clean up.	5.1. Excessive sealant is removed from joints and surrounding surfaces, and cartridge nozzle or container is sealed securely. 5.2. Sealants are promptly removed from tools and equipment.

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ELEMENT	PERFORMANCE CRITERIA
	5.3. Work area is cleared and ***waste material and debris*** are disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specifications.
	5.4. Tools and equipment are cleaned, routinely maintained and returned to store.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply measurements and calculations relevant to surface areas
- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- AS1940 The storage and handling of flammable combustible liquids
- behaviour of sealant materials used in structures
- job safety analysis (JSA) and safe work method statements
- measurement and calculation techniques relevant to surface areas

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REQUIRED SKILLS AND KNOWLEDGE

- safe materials handling techniques and requirements, including hazardous materials relevant to sealant application work
- safe use of scaffolding and working platforms
- types and performance of sealants used in buildings
- types and use of hand tools and equipment relevant to sealant application and installation work
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to handle and use all the sealant materials and application devices listed in the range statement, providing evidence of the ability to:

- comply with OHS regulations and state and territory legislation applicable to workplace operations
- comply with organisational policies and procedures, including quality assurance requirements
- select and use appropriate processes, tools and equipment to carry out tasks
- adopt and carry out correct procedures prior to and during handling and application of materials
- demonstrate safe and effective operational use of tools and equipment
- demonstrate safe application in the process of cleaning up application area and cleaning equipment
- communicate with others to ensure safe and effective operations.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory

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EVIDENCE GUIDE

or Australian standards' requirements.

Resource implications for assessment include:

- sealants and sealant devices appropriate to application tasks
- plant and equipment appropriate to application processes
- hand tools appropriate to application processes
- work location appropriate to activity processes
- MSDS information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete

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EVIDENCE GUIDE

confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to application of sealants and sealant devices
- relevant Australian standards
- safe work procedures relating to application of sealants and sealant devices
- signage

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RANGE STATEMENT

	• verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling hazardous materials where applicable in accordance with AS1940 The storage and handling of flammable combustible liquids
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment include:	• brooms • brushes • cartridge applicators • putty knives and paring knives • rollers • sanders • spray equipment.

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RANGE STATEMENT

Quality requirements include:	• attention to job specifications
	• control of handling procedures
	• preparation of surfaces
	• quality of materials
	• relevant regulations, including:
	  • Australian standards
	  • internal company quality policy and standards
	  • manufacturer specifications where specified
	  • workplace operations and procedures
	• use and maintenance of equipment.

Environmental requirements include:	• clean-up management • dust and noise • stormwater protection • waste management.
Statutory and regulatory authority includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Sealant materials include:	• bitumen • mastic • putty • silicone • waterproof paint.
Sealant materials can be ***applied*** to:	• acrylic sheeting • bricks and concrete masonry • concrete • glass • metal sheeting • paints • plaster sheeting • plywood and particle board • structural metallic sections and components • timber.
Sealant devices include:	• cover plates to aluminium framework • cover straps or beading to sheet jointing • flashings to window and door frames • impregnated material for masonry expansion joints • strip or sheet membrane.

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RANGE STATEMENT

Waste material and debris include:	• broken or damaged goods • cardboard • loose material • paper • plastic • sealants and sealing materials.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCSH3001A Set out and assemble cabinets, showcases, wall units, counters and workstations

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit specifies the outcomes required to set out component parts and assemble and fit them to complete the construction of a fitment.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills and knowledge to set out and assemble cabinets, showcases, wall units, counters and workstations, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied. 1.8. Set-out material is prepared to specified sectional dimensions.
2. Develop set-out.	2.1. Overall width, height and depth of ***carcase construction*** are marked out to specifications using ***set-out boards*** with benchtop length, thickness overhang and edge profile indicated as specified. 2.2. Plinth/kicker is accurately depicted, including length, depth, set back, position of intermediate bearers and joint detail. 2.3. Position and thickness of vertical carcase components are marked in to specifications with position of shelving, including thickness, depth and type (fixed/adjustable), all accurately depicted on set-out and overall height of unit marked in to specified dimension. 2.4. Drawer is detailed, including height, width, clearances and runner type as specified. 2.5. Position, width and design of drawer fronts and doors are accurately marked in on set-out. 2.6. Capital or bolection moulding detail and position are

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ELEMENT	PERFORMANCE CRITERIA
	clearly indicated to specification and relevant joint detail is indicated as specified to allow accurate calculations of quantities. 2.7. Height of drawer fronts and doors, including clearances, are accurately marked in. 2.8. Position and dimensions of fixing rails are clearly defined as specified. 2.9. Drawer detail, including height and clearance, is defined to specifications. 2.10. Relevant joint detail is drawn in to specification.
3. Mark out material for components.	3.1. Materials are selected and prepared to design requirements for components, including face and edge marked on each component. 3.2. Length and joint details are transferred from set-out to component material with marking out on each component checked in preparation for ***machining***. 3.3. Set-out material is marked, where required, for appropriate identification of components.
4. Carry out manufacturing processes on components.	4.1. Machines are set up and used to carry out machining processes of set-out component material, with overall sequence of assembly determined in accordance with carcase structure. 4.2. Components are prepared to set-out details, and joints are checked for design requirements prior to assembling.
5. Assemble carcase.	5.1. Carcase is assembled in line with determined procedures, with faces and edges flush and joints secured to specified fixing. 5.2. Carcase is squared and held square with temporary brace or back fixed into position, with shelves and mullions installed as specified in accordance with fitment design. 5.3. Plinth/kicker is assembled to designed construction, square and out of wind with adjoining surfaces flush and face panels fitted kicker with all joints close fitting and adjoining surfaces flush. 5.4. Plinth/kicker is positioned to specified location and screwed to carcase. 5.5. External fixed panels are prepared to specifications for assembling and secured to carcase.
6. Assemble and fit	6.1. Bench/counter top components are assembled to

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ELEMENT	PERFORMANCE CRITERIA
benchtops.	specified design and finished in preparation for installation.
	6.2. Bench/counter top is positioned on carcase to specified dimensions and fixed by specified fixing method and appropriate ***fixings and fasteners***.
7. Assemble and install drawers.	7.1. Drawers are assembled to specifications, with bottoms fitted and fixed.
	7.2. Drawer runner type is determined and installed to specified dimensions and manufacturer specifications.
	7.3. Drawers are installed parallel to carcase bottom showing specified clearances, and drawer fronts and doors are prepared for installation.
8. Fit doors and drawer fronts.	8.1. Door hinges are installed to plan and manufacturer specifications and doors are hinged and hung to carcase with faces flush and specified clearances allowed.
	8.2. Drawer fronts are secured to drawers by nominated method with specified clearances allowed and handles and catches accurately installed to specification.
	8.3. Unit is cleaned up and ***surface edge finishes*** are sanded to specified finish for proposed coated finish, where applicable.
9. Clean up.	9.1. ***Free standing fitments*** are stored safely to avoid damage to surfaces.
	9.2. Work area is cleared to specifications and waste and unwanted material is removed safely.
	9.3. Plans, specifications and set-outs are stored for future reference and tools and equipment are cleaned, maintained and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

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REQUIRED SKILLS AND KNOWLEDGE

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret drawings and specifications
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply measurements and calculations
- planning and organisational skills to identify requirements, apply relevant resources and sequence tasks
- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- types of fitments
- adhesives, fixings and fasteners relevant to fitment construction
- clearances associated with types of finishes to surfaces
- organisation's quality assurance requirements
- drawings and specifications
- handling of materials relevant to fitment construction
- manufacturing processes for fitment components
- materials and their characteristics relevant to fitment construction
- measurement and marking related to making set-out for fitments
- methods of constructing fitments
- setting out, assembling and fixing procedures for fitment construction
- use of tools and equipment relevant to setting out materials, manufacturing and assembling processes for fitments
- workplace and safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to manufacture and assemble either a cabinet, showcase, wall unit, counter or workstation, providing evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational quality procedures and processes within context of manufacturing and assembling fitments • select and use appropriate setting out techniques, tools and equipment • correctly apply details and dimensions to make set-out for fitment • show clear details of sectional material and method of joining components on set-out • accurately apply set-out to mark each component correctly for length and machining processes • efficiently identify marking and stacking of each different marked component • identify details and specifications of nominated fitment to be constructed • identify components and manufacturing processes to be carried out • safely and efficiently set up and use machines for required machining processes • safely and efficiently use hand tools and equipment • select and use appropriate processes, tools and equipment for assembling components

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EVIDENCE GUIDE

	• demonstrate sound techniques in checking and adjusting component joints for fitting • safely and efficiently assemble and fix carcase and components parts • accurately and safely fit and fix/secure drawers and doors • apply appropriate processes to finish surfaces to specified requirement • identify typical faults and problems that occur and action required to rectify them • communicate with others to ensure safe and effective workshop operations.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • workshop location and set-out bench appropriate to activity • dressed and sheet materials relevant to fitment designs • material appropriate for set-out boards • drawings and specifications relevant to activities • tools and equipment appropriate for activity • materials and components related to proposed activity • static machines relevant to proposed manufacturing processes • drawings, specifications and documents relevant to the fitment. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

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EVIDENCE GUIDE

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

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Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to setting out and assembling cabinets, showcases, wall units, counters and workstations
- relevant Australian standards
- safe work procedures relating to setting out and assembling cabinets, showcases, wall units, counters and workstations
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Planning and preparation include:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- equipment defect identification
- work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- hazard control
- hazardous materials and substances
- organisational first aid
- PPE prescribed under legislation, regulations

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RANGE STATEMENT

	and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment include:	• air compressor and hoses • bevels • chisels • clamps • hammers • hand saws • marking gauges • measuring tapes and rules • nail guns • power drills • power leads • power planers • power routers • power saws • sanders • sash cramps • screwdrivers • set-out bench • squares • straight edge.
Quality requirements include:	• assembling procedures • attention to specifications of work • control of handling procedures • quality of materials

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RANGE STATEMENT

	• relevant regulations, including:
	  • AS1473 Guarding and safe use of woodworking machinery
	  • internal company quality policy and standards
	  • manufacturer specifications where specified
	• storing and packaging
	• use and maintenance of equipment
	• workplace operations and procedures.

Environmental requirements include:	• clean-up management • dust and noise • stormwater protection • waste management.
Statutory and regulatory authority includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.

Carcase construction:	• materials include:
	  • medium density fibreboard (MDF)
	  • particle board
	  • plywood
	  • timber
	  • veneered particle board
	• types include:
	  • framed and panelled
	  • hollow frame flush
	  • solid core flush
	  • solid panel
	  • type and thickness of backing.

Set-out boards may be:	• paper on solid base • particle board • plywood.
Machining manufacturing processes include:	• band sawing to shape • cutting to lengths • dressing to shape • grooving and rebating • mortising • moulding to shape • sanding

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RANGE STATEMENT

	• trenching for housings • trenching for tenons.
Fixings and fasteners used in assembling fitments include:	• brads • director screws • knockdown fittings • nails • self-tapping screws • wood screws.
Surface edge finishes include:	• aluminium mouldings • plastic laminates • thermo plastics • timber veneers.
Free standing fitments may be constructed of:	• acrylic • glass • laminates • manufactured board • solid timber.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCSH3002A Set out and fabricate shopfront commercial entries bulkheads and component fittings

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit specifies the outcomes required to set out and fabricate component parts and fittings, including bulkheads where required, that form a total shopfront structure.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills and knowledge to fabricate commercial entries for street fronts, shopping centres, commercial and industrial buildings and both internal and external applications, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Personal protective equipment selected, correctly fitted and used. 1.6. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.7. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.8. ***Environmental*** requirements are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2. Undertake site measurements.	2.1. Datums and gridlines or reference points are located and confirmed using ***levelling techniques***. 2.2. Surrounding structures and surfaces are checked for plumb, level, line and square. 2.3. Measurements are taken of internal width and height, if applicable, and are recorded. 2.4. Inconsistencies in dimensions, layout or location of structure outside the specified tolerances are noted and reported to appropriate personnel. 2.5. Position of proposed frames and fittings are marked out on surrounding surfaces using non-permanent markers.
3. Assemble components of framework.	3.1. Appropriate area is selected and material components are laid out for assembly. 3.2. Framework is assembled, with overall dimension checked for conformity to location and design and using appropriate ***fixings and fasteners***. 3.3. Frame is checked for square and adjusted where

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ELEMENT	PERFORMANCE CRITERIA
	required.
	3.4. Areas are laminated where required and finishes applied where applicable.
4. Pre-fit component fittings.	4.1. Component fittings are pre-fitted where applicable.
	4.2. Fittings are fixed to locations according to specifications.
5. Prepare for packaging.	5.1. Fittings too large for safe transport are disassembled.
	5.2. Packaging of separate components is identified and arranged.
6. Clean up.	6.1. Components and assembly diagram are numbered for inclusion in delivery instructions.
	6.2. Waste and unwanted material are disposed of safely.
	6.3. Unused materials are stored/stacked.
	6.4. Tools and equipment are cleaned, maintained and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret drawings and specifications
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply measurements and calculations
- planning and organisational skills to identify requirements, apply relevant

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REQUIRED SKILLS AND KNOWLEDGE

resources and sequence tasks

- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- aluminium construction materials and methods
- AS1873 Powder actuated (PA) hand-held fastening tools
- AS2047.2 Windows in buildings - Construction, installation and maintenance
- commonly used shopfitting materials and their characteristics
- job safety analysis (JSA) and safe work method statements
- measuring and levelling processes related to setting out and checking lineal measurements and levels of surfaces
- measuring and squaring processes relevant to lineal measurements for framework
- organisation's quality assurance requirements
- shopfront design processes
- timber construction methods
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to prepare all components for manufacture of a shopfront, providing evidence of the ability to:

- demonstrate operational safety compliance with OHS regulations applicable to workplace operations
- apply organisational quality procedures and processes within context of assembling and installing a shopfront
- identify design, delivered assemblies, components, fittings and assembly diagram
- identify and select components and fittings to locations in assembled shopfront
- select and use appropriate processes, tools and equipment to assemble and install nominated unit
- demonstrate appropriate and effective applications to prepare opening to receive framework
- safely and efficiently assemble sections, components and fittings
- safely and efficiently install bulkhead into position
- safely and efficiently locate and install assembly into place
- safely and efficiently install components and fittings and, where applicable, check for designed operation
- identify typical faults and problems that occur

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EVIDENCE GUIDE

	and action required to rectify them • communicate with others to ensure safe and effective workplace operations.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • workshop location with appropriate area • tools and equipment appropriate to required tasks • materials and prepared components for assembly processes • drawings, specifications and other documentation relevant to activity. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments.

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EVIDENCE GUIDE

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel

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RANGE STATEMENT

	• manufacturer specifications and instructions, where specified • material safety data sheets (MSDS) • memos • regulatory and legislative requirements pertaining to setting out and fabricating shopfront commercial entries bulkheads and component fittings • relevant Australian standards • safe work procedures relating to setting out and fabricating shopfront commercial entries bulkheads and component fittings • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment

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RANGE STATEMENT

	• use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• air compressor and hoses • bolsters • brushes • chalk lines • chisels, including cold chisels • clamps • explosive power tools • grinders • hammers • hand saws • measuring tapes and rules • operation of explosive power tools in accordance with AS1873 Powder actuated (PA) hand-held fastening tools • plumb bob • power drills, including masonry • power leads • power planers • power saws • sash cramps • saw stools • scaffolding • screwdrivers • set spanners • squares • step ladders.

Quality requirements include:	• assembling procedures
	• attention to specifications of work
	• control of handling procedures
	• protection of material surfaces
	• quality of materials
	• relevant regulations, including:
	  • Australian standards
	  • internal company quality policy and standards
	  • manufacturer specifications where specified

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RANGE STATEMENT

	• workplace operations and procedures • use and maintenance of equipment • workplace operations and procedures.
Materials include:	• aluminium • timber.
Environmental requirements include:	• clean-up management • dust and noise • stormwater protection • waste management.
Statutory and regulatory authority includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Levelling techniques include using:	• automatic level • spirit level • spirit level and straight edge • staff.
Fixings and fasteners include:	• bolts and nuts • coach screws • masonry anchors • metal brackets • self-tapping screws • wall plugs.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCSH3003A Assemble and install shopfront commercial entries bulkheads and components

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit specifies the outcomes required to assemble component parts and fittings that form the total product fabrication for a shopfront structure.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills and knowledge to assemble and install fabricated street fronts, shopping centres, and commercial and industrial buildings, including both internal and external applications, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied. 1.8. Fittings and/or pre-assembled frames are unloaded carefully to protect finishes and are placed in well protected area until ready to reassemble.
2. Establish datum and plumb lines.	2.1. Datum is struck for level as required for installation. 2.2. Plumb lines are marked at all connecting points.
3. Prepare opening.	3.1. Opening dimensions are checked in accordance with dimensions of fabrication and plumb lines are checked for similarity to original site measurement. 3.2. Drawings are checked for position of lease line or where unavailable checked with building contractor. 3.3. Protrusions are scraped, chipped and cut away to connecting points to facilitate installation. 3.4. Narrowest part of opening is determined and sill packing is set up to specified level for installation that to conforms to AS2047 Windows in buildings.
4. Assemble shopfront.	4.1. Fittings are placed into position to commence installation. 4.2. Holes are pre-drilled for fixing positions suitable to connect to brickwork, timber and stone.

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ELEMENT	PERFORMANCE CRITERIA
	4.3. Measurements of completed assembly are checked against opening and glazier is contacted for site measurements.
5. Fit bulkhead.	5.1. Bulkhead is prepared for installation by drilling, cutting and routering holes and openings to accept fittings and fixtures.
	5.2. Scaffolding is erected to fit bulkhead into position.
	5.3. Bulkhead is raised into position using mechanical lifting equipment and secured to specifications using fixing methods required to securely support installation.
6. Install assembly.	6.1. Door are checked for square to ensure glazier has blocked glass correctly and assembly is positioned into opening allowing it to rest on packing at highest position in floor.
	6.2. Datum line is transferred on assembly and position is measured and transferred to all connecting points.
	6.3. Assembly is installed to level using appropriate equipment for levelling process, plumbed off narrowest point of width and packed to position.
	6.4. Assembly is anchored at all connecting points to specifications, doors are fitted where applicable and glazier is contacted to notify that assembly is ready for glass installation.
	6.5. Door closures are checked to ensure that they face mount, floor or transom and that automatic and floor or head-fixed tracks operate freely.
	6.6. Closures, door furniture and scribe fillers are fitted and any remaining gaps are sealed with approved sealant.
	6.7. Sealants are applied to specification to protect against water, wind and dust penetration.
7. Clean up.	7.1. Assembly is cleaned free from excess sealant, finger marks and masking tape.
	7.2. Waste and unwanted material are disposed of safely with any waste aluminium stored for recycling and any unused material stored/stacked.
	7.3. Tools and equipment are cleaned, maintained and stored.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret drawings and specifications
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply measurements and calculations
- planning and organisational skills to identify requirements, apply relevant resources and sequence tasks
- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- Australian standards, including AS1873 Powder actuated (PA) hand-held fastening tools, and AS2407 Windows in buildings
- design and construction processes for shopfronts
- interpretation of relevant drawings and specifications
- job safety analysis (JSA) and safe work method statements
- organisation's quality assurance requirements
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to prepare and assemble all components of a shopfront, providing evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational quality procedures and processes within context of setting out and fabricating a shopfront • identify details and specifications of nominated shopfront to be set out • accurately apply tools and equipment to set out and mark location of frame material thickness and components • accurately apply measuring devices to read and record dimensions, plumb and level • identify inconsistencies in dimensions, plumb and level recorded for notification to appropriate personnel • identify and select prepared materials for components • display sound procedures for the safe and accurate preparation of each component for assembling • select and use appropriate processes, tools and equipment for assembling components • demonstrate safe and efficient use of tools and equipment • demonstrate sound techniques in the safe and efficient assembly of components to form

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EVIDENCE GUIDE

	framework for shopfront • display sound and accurate fitting of component fittings to locations • complete assembly free of scratches, dents and blemishes • safely and efficiently disassemble components and fittings and identify for delivery and assembling instructions • identify typical faults and problems that occur and action required to rectify them • communicate with others to ensure safe and effective workshop operations.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • workshop location with appropriate area • tools and equipment appropriate to required tasks • materials and prepared components for assembly processes • drawings, specifications and documentation relevant to activity. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning

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EVIDENCE GUIDE

knowledge required for practical application

- reinforce the integration of employability skills with workplace tasks and job roles
- confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised

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RANGE STATEMENT

wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to assembling/installing shopfront commercial entries bulkheads and component fittings
- relevant Australian standards
- safe work procedures relating to assembling/installing shopfront commercial entries bulkheads and component fittings
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Planning and preparation include:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- equipment defect identification
- work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- hazard control
- hazardous materials and substances
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - concealed services (water, power and gas)
  - lighting

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RANGE STATEMENT

	• restricted access barriers • traffic control • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• air compressor and hoses • brushes • building line • chalk line • clamps • hammers • levelling equipment • measuring tapes and rules • nail guns • plumb bob • power drills • power leads • sash cramps • screwdrivers • spirit levels • squares • step ladders • straight edge.

Quality requirements include:	• assembling procedures
	• attention to specifications of work
	• control of handling procedures
	• protection of material surfaces
	• quality of materials
	• relevant regulations, including:
	  • Australian standards
	  • internal company quality policy and standards
	  • manufacturer specifications where specified
	  • workplace operations and procedures

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RANGE STATEMENT

	• use and maintenance of equipment • workplace operations and procedures.
Materials include:	• aluminium • timber.
Environmental requirements include:	• clean-up management • dust and noise • stormwater protection • waste management.
Statutory and regulatory authority includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCSH3005A Apply and trim decorative finishes

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit specifies the outcomes required to prepare and apply decorative and ornamental edgings and add-ons as finishes to specified designs.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills and knowledge to apply decorative and ornamental edgings and add-ons used to provide finishes to a specified design, and may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Appropriate personal protective equipment selected, correctly fitted and used. 1.6. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.7. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.8. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2. Identify types of decorative finishes and requirements for fixing.	2.1. Types of ***decorative add-ons and finishes*** are identified and applied. 2.2. Methods of fixing and finishing ***add-ons*** are identified and applied.
3. Carry out fixing processes and finishing techniques.	3.1. Preparation requirements for ***fixing*** of add-ons are carried out to instructions and specifications. 3.2. Decorative add-ons are fitted and fixed according to instructions and specifications. 3.3. Applied add-ons are trimmed and finished to specifications.
4. Clean up.	4.1. Work area is cleared and waste material disposed of safely. 4.2. Tools and equipment are cleaned, maintained and stored.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret drawings and specifications
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply measurements and calculations
- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- commonly used decorative and ornamental finishes
- fixings and fasteners relevant to affixing decorative edgings and add-ons
- interpretation of drawings and specifications
- job safety analysis (JSA) and safe work method statements
- materials and their characteristics relevant to decorative edgings and add-ons
- measuring and setting out related to decorative finishes
- organisation's quality assurance requirements
- workplace and environment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to select finishes, and fix and finish at least two types of decorative add-ons in two different materials listed in the range statement, providing evidence of the ability to:

- comply with OHS regulations applicable to workplace operations
- apply organisational quality procedures and processes within the context of applying decorative finishes
- identify four designed decorative or ornamental finishes to be applied in application projects
- identify and select required materials and components for project
- select and use appropriate processes, tools and equipment for application tasks
- appropriately and accurately set out materials and locate for placement
- adopt safe and effective handling procedures for movement and placement of materials and components
- safely and efficiently fix or secure two separate add-ons into place
- apply appropriate and efficient applications of at least two specified finishes
- identify typical faults and problems that occur and action required to rectify them
- communicate with others to ensure safe and effective workplace operations.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and

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EVIDENCE GUIDE

environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- workplace location and unit associated with application tasks
- materials and components relevant to proposed activity
- tools and equipment appropriate for activity
- drawings and documentation relevant to designed activity.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further

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EVIDENCE GUIDE

learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to applying and trimming decorative finishes
- relevant Australian standards
- safe work procedures relating to applying and trimming decorative finishes
- signage

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RANGE STATEMENT

	• verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	  • working platforms and scaffolding
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment include:	• air compressor and hoses • bevels • chisels • clamps • hammers • hand saws • measuring tapes and rules • nail guns

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RANGE STATEMENT

	• power drills • power leads • saw stools • screwdrivers • spirit levels • squares.

Quality requirements include:	• attention to specifications of work
	• control of handling procedures
	• quality of materials
	• relevant regulations, including:
	  • Australian standards
	  • internal company quality policy and standards
	  • manufacturer specifications where specified
	  • workplace operations and procedures
	• use and maintenance of equipment
	• workplace operations and procedures.

Environmental requirements include:	• clean-up management • dust and noise • stormwater protection • waste management.
Statutory and regulatory authority includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Decorative add-ons and finishes include:	• brackets • carving • extruded sections • mouldings.
Add-ons may be manufactured from:	• aluminium • marble • medium density fibreboard (MDF) • plaster • plastics • reinforced concrete • stone • timber.
Fixing methods include:	• dowel joint • nailing • screwing

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RANGE STATEMENT

- use of adhesives.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area

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CPCCSH3006A Apply finishes

Modification History

Element 6 and associated unit content relating to powder coating removed
Not equivalent to CPCCSH3004A

Unit Descriptor

This unit specifies the outcomes required to prepare and apply types of finishing materials to surfaces.

Application of the Unit

This unit of competency supports the achievement of skills and knowledge to apply finishes to surfaces, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes.
		1.2	***Work health and safety*** (WHS) requirements are followed according to safety plans and policies.
		1.3	Signage and barricade requirements are identified and implemented.
		1.4	***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement.
		1.5	Material quantity requirements are calculated according to plans, specifications and ***quality requirements***.
		1.6	***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
		1.7	***Environmental requirements*** are identified for the project according to environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2	Identify various types of finishing applications.	2.1	Various types of finishing ***surfaces*** are identified according to type of material surface and specified finish.
		2.2	Methods of ***applying finishes*** to surfaces are identified.
		2.3	Characteristics for type of material to be applied are identified to determine means of application.
3	Apply stain to a surface/veneered surface.	3.1	Surface is checked to ensure that it is clean, dry and ready for stain application.
		3.2	Stain is applied in an even and consistent manner with cloth, pad or brush to instructions and specifications.

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4	Apply lacquers to a surface.	4.1	Stained surface is checked as being fully dry and light sanded to ensure clean surface.
		4.2	Surface is sanded to ensure that it is clean and free of imperfections.
		4.3	Consistent coverage of lacquer is applied to surface according to manufacturer recommendations.
5	Apply paint/sealer to a surface.	5.1	Surface is checked to ensure it is smooth and clean, then paint or sealer is applied with roller/brush to obtain an even coverage to specifications.
		5.2	Paint or sealer is applied with spray gun to obtain an even coverage to specifications.
6	Clean up.	6.1	Area is cleaned and waste material disposed of safely.
		6.2	Unused materials are sealed and stored.
		6.3	Equipment is cleaned safely using correct solvent according to material safety data sheet (MSDS) instructions, maintained and stored.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- initiative and enterprise skills to:
  - recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
  - select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- literacy skills to read and interpret drawings, specifications and relevant Australian standards
- numeracy skills to calculate material requirements
- planning and organising skills to identify requirements, apply relevant resources and sequence tasks
- problem-solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities

Required knowledge

- interpretation of construction specifications
- job safety analysis (JSA) and safe work method statements
- organisation's quality assurance requirements
- surface preparation relevant to material surfaces and applied finishes
- types and performance of finished surfaces
- types and uses of finishing materials
- types of applicators and equipment relevant to applying finishing materials
- types of hazardous materials and safe handling requirements
- types of material substrates and surfaces
- workplace and equipment safety requirements
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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to apply finishes to all the surfaces listed in the range statement, providing evidence of the ability to:

- comply with WHS regulations applicable to workplace operations
- apply organisational quality procedures and processes within context of applying finishes to timber and aluminium surfaces
- identify designed finish and surface to be covered
- identify and select appropriate materials and applicators to apply three separate types of finishes
- select and use appropriate processes and safety requirements to prepare materials, application and area
- select and use appropriate personal protective equipment
- safely and effectively apply material to provide designed base coat
- safely and efficiently sand and prepare surface before coat applications, where applicable
- correctly and efficiently use applicators
- safely and effectively apply coats of three specified finishes to surfaces, free from blemishes
- identify typical faults and problems that occur and action required to rectify them
- communicate with others to ensure safe and effective workshop operations.

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Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- workplace location appropriate for application processes
- spray booth and appropriate spray equipment for activity
- materials and equipment applicable to activity processes
- documentation and specifications relevant to the application and finishes.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace
- where the assessment is part of a structured

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learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to applying finishes
- relevant Australian standards
- safe work procedures relating to applying finishes
- signage
- verbal, written and graphical instructions
- work bulletins

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- work schedules, plans and specifications.

Planning and preparation include:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- equipment defect identification
- work site inspection.

Work health and safety is to be according to state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- hazard control
- hazardous materials and substances
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - concealed services (water, power and gas)
  - lighting
  - restricted access barriers
  - traffic control
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Tools and equipment include:

- air spray equipment
- airless spray equipment
- benches
- brushes
- buckets
- dusting brushes
- pads
- paint stirrers
- rags

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- roller accessories
- rollers
- spray guns
- stools.

Quality requirements include:

- control of handling procedures
- finishing of surfaces
- quality of materials
- relevant regulations, including:
  - internal company quality policy and standards
  - manufacturer specifications where specified
  - workplace operations and procedures
- spray application procedures
- use and maintenance of equipment
- workplace operations and procedures.

Materials include:

- lacquers
- paints
- sealers.

Environmental requirements include:

- clean-up management
- dust and noise
- stormwater protection
- waste management.

Statutory and regulatory authority includes:

- federal, state and local authorities administering applicable Acts, regulations and codes of practice.

Surfaces to be finished may be:

- aluminium
- medium density fibreboard (MDF)
- particleboard
- timber
- veneered panelling.

Methods for ***applying finishes*** for both horizontal and vertical applications include:

- brush
- pad
- roller
- spray gun.

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Unit Sector(s)

Functional area

Unit sector Construction

Custom Content Section

Not applicable.

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CPCCSI2001A Use colour for signage

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to use colour for signage in a range of sign manufacture and installation activities.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills using colour principles in a range of signage applications, and includes working with others and as a member of a team. It supports the needs of entrants to the signage industry.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Apply colour matching systems.	1.1. Colour matching systems are identified. 1.2. Attributes of different colour matching systems are identified and applied. 1.3. Different colour matching systems are applied for specific functions.
2. Identify and apply the theory of colour to signage.	2.1. Principles of colour legibility and contrast are identified and applied to signage. 2.2. Principles of ***colour harmony*** are identified and applied to signage. 2.3. ***Colour schemes*** are identified and applied to signage.
3. Apply computer colour matching systems.	3.1. Colour matching by computer colour matching systems is applied to signage.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to apply design concepts and principles of colour
- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - charts and hand drawings
    - design principles
    - job drawings
    - manufacturer specifications and instructions
    - organisational work specifications
    - requirements and instructions issued by authorised organisational or

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REQUIRED SKILLS AND KNOWLEDGE

external personnel
  - report faults
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- problem solving skills to recognise, and take action to rectify, minor faults and problems.

Required knowledge

Required knowledge for this unit is:

- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- quality assurance requirements, including:
  - Australian and international standards relevant to the sign industry
  - internal company quality assurance policy and risk management strategies
  - workplace operations and procedures
- relevant Australian and New Zealand standards and:
  - manufacturer specifications
  - other applicable codes or standard operating procedures relevant to the sector
- terminology and definitions used in signage design.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- understanding and applying:
  - principles of colour
  - colour theory
  - colour matching
  - signage for visual impact
- applying appropriate software in order to design and apply the principles of colour to signage.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to using colour for signage
- support materials appropriate to activity
- workplace instructions relating to using colour for signage
- material safety data sheets
- research resources, including industry-related

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EVIDENCE GUIDE

systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in

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relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

1.1. ***Colour matching systems*** include:
- black and white
- cyan, magenta, yellow and black (CMYK)
- grey scale
- pantone matching system (PMS)
- red, green and blue (RGB).

1.2. ***Colour harmony*** includes:
- analogous
- complementary
- monochromatic
- sp lit complementary.

1.3. ***Colour schemes*** include:
- analogous
- complementary
- monochromatic
- split complementary.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSI2002A Lay out and design signage

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to lay out and design signage.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Application of the Unit

Application of the unit

1.1. This unit of competency supports the achievement of skills and knowledge to lay out and design signs, and includes working with others and as a member of a team.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Use correct layout principles to maximise signage effect.	1.1. Type of formal or informal layout is determined from ***client*** specifications. 1.2. Correct ***principles of layout*** appropriate to given brief are identified and applied.
2. Develop layout roughs/sketches from specifications.	2.1. Job specifications are established and applied. 2.2. Sketches are produced to meet job specifications using appropriate techniques.
3. Reproduce layouts from layout roughs/sketches using computer programs.	3.1. Layouts are produced using appropriate ***computer software*** to accurately interpret sketches and apply ***principles of legibility and spacing of letters***. 3.2. Layouts are reviewed following feedback from client. 3.3. Layouts are saved and stored safely.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to apply layout and design concepts and principles and sound techniques to produce layout accurately to a balanced design
- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - design principles
    - job drawings
    - charts and hand drawings
    - manufacturer specifications and instructions

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REQUIRED SKILLS AND KNOWLEDGE

    - organisational work specifications
    - computer programs
    - requirements and instructions issued by authorised organisational or external personnel
  - report faults
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- organisational skills, including the ability to plan and set out work
- problem solving skills to recognise, and take action to rectify, minor faults and problems
- teamwork skills to be able to coordinate with others, action tasks and relate to people from a range of social, cultural, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- identification of dimensions, symbols, abbreviations and key features of signage
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- quality assurance requirements, including:
  - Australian and international standards relevant to the sign industry
  - internal company quality assurance policy and risk management strategies
  - workplace operations and procedures
- relevant Australian and New Zealand standards, and:
  - manufacturer specifications
  - other applicable codes or standard operating procedures relevant to the sector
- terminology and definitions used in signage design.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment This unit of competency could be assessed in the

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	workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of:
	• understanding and applying:
	  • principles of layout and design
	  • layout and design theory
	  • signage for visual impact
	• applying appropriate software in order to design and apply the principles of layout and design to signage
	• correct and effective protocols for using computers and software.

Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to layout and design signage • support materials appropriate to activity • workplace instructions relating to layout and design signage • material safety data sheets • research resources, including industry-related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources,

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	and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge • all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed. Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training

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staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Clients include:

- business owners
- printers
- property owners
- sign manufacturers
- statutory bodies.

Principles of layout include:

- balance
- colour
- contrast
- harmony
- letter styles
- spacing.

Computer software includes:

- Adobe Illustrator
- Adobe Photoshop
- CorelDraw
- FlexiSign
- Vinyl Master Pro.

Principles of legibility and spacing of letters include:

- bold, normal and light
- format of text - capitals, lowercase, etc.
- spacing issues
- type of font used.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSI2003A Prepare surfaces for signage

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to prepare a range of surfaces for signage application.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills and knowledge to prepare a variety of surfaces to take sign application, and includes working with others and as a member of a team.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare work.	1.1. ***Quality assurance requirements*** of signage operations are recognised and adhered to. 1.2. ***Safety*** (***OHS***) requirements are recognised and adhered to in accordance with application tasks and workplace operations. 1.3. ***Job requirements*** are identified from drawings, specifications, instructions and/or client briefs. 1.4. Product range is assessed and selected in accordance with job requirements and relevant Australian standards. 1.5. Paint systems and materials are selected to carry out tasks consistent with job requirements. 1.6. ***Tools and equipment*** are selected to carry out tasks consistent with job requirements. 1.7. Routine maintenance requirements of equipment are identified and implemented in accordance with workplace and quality assurance procedures. 1.8. Temporary or permanent application of materials is determined from job requirements.
2. Prepare surface and apply undercoat or primer.	2.1. Surface is ***cleaned and/or abraded*** with appropriate tools and equipment to manufacturer specifications. 2.2. ***Undercoat or primer*** is applied to manufacturer specifications.
3. Apply paint coating using spray application.	3.1. Appropriate spray gun is selected, used safely and effectively and set to meet manufacturer specifications. 3.2. Air compressor is set to meet manufacturer specifications. 3.3. Compatible ***coating type*** for ***substrate*** is selected and the correct viscosity of paint is determined for specified application. 3.4. Coating is applied evenly over the surface area. 3.5. Tools and equipment are cleaned using the correct cleaning products and procedures.
4. Apply paint coating using brush application.	4.1. Appropriate brushware and compatible coating type for the substrate are selected. 4.2. Coating is applied evenly over the surface area. 4.3. Brushes are cleaned using correct cleaning products and procedures.
5. Apply paint coating	5.1. Appropriate roller and roller sleeve, and compatible

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ELEMENT	PERFORMANCE CRITERIA
using roller application.	coating type for the substrate are selected. 5.2. Coating is applied evenly over the surface area. 5.3. Rollers and sleeves are cleaned using correct cleaning products.
6. Clean up.	6.1. Surrounding surface environment/area is cleaned using correct solvent. 6.2. Waste materials are removed in accordance with ***statutory and regulatory authority requirements***. 6.3. Tools and equipment, including personal protective equipment, are cleaned, maintained and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to prepare surfaces using correct applicators and materials
- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - charts and hand drawings
    - computer programs
    - job drawings
    - manufacturer specifications and instructions
    - organisational work specifications
    - requirements and instructions issued by authorised organisational or external personnel
  - report faults
  - use and interpret non-verbal communication

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REQUIRED SKILLS AND KNOWLEDGE

- use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- problem solving skills to recognise, and take action to rectify, minor faults and problems
- organisational skills, including the ability to plan and set out work
- teamwork skills to be able to coordinate with others, action tasks and relate to people from a range of social, cultural, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- coating types characteristics and uses for:
  - acrylic lacquers and their thinner/reducer
  - clear finishes and their thinner
  - oil based paints and their solvents
  - spraying enamel and its thinner
  - two-pack paints and their thinner
  - water-based paints and their thinner
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- quality assurance requirements, including:
  - Australian and international standards relevant to the sign industry
  - internal company quality assurance policy and risk management strategies
  - workplace operations and procedures
- relevant Australian and New Zealand standards, and:
  - manufacturer specifications
  - OHS requirements
  - other applicable codes or standard operating procedures relevant to the sector
- statutory and regulatory authority requirements, particularly those relating to:
  - removal of waste products
  - storage of chemicals
- terminology and definitions used in signage.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- understanding and applying:
  - correct coating products for particular applications according to their characteristics
  - solvents, thinners and reducers safely and correctly
- using spray guns, brushes and rollers effectively to apply coatings on surfaces being prepared for signage.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to preparing surfaces for signage
- support materials appropriate to activity
- workplace instructions relating to preparing surfaces for signage
- material safety data sheets

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- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language,

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literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Quality assurance requirements include:

- attention to work specifications
- Australian and international standards relevant to the sign industry
- control of handling procedures
- internal company quality assurance policy and risk management strategies
- procedures for installing and finishing signage
- quality of materials
- use and maintenance of equipment
- workplace operations and procedures.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- hazard control
- hazardous materials and substances
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - concealed services (water, power and gas)

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RANGE STATEMENT

	• lighting • restricted access barriers • traffic control • working at heights • work site visitors and the public • working in confined spaces • working in proximity to others • use of firefighting equipment • use of machines • use of tools and equipment • workplace environmental requirements and safety.
Job requirements include:	• assessment of conditions and hazards • determination of work requirements • equipment defect identification • safety plans and policies • work site inspection.
Tools and equipment include:	• air compressor • brushware • roller and roller sleeve • spray gun.
Cleaned and/or abraded materials include:	• alcohol • garnet paper • methylated spirits • mineral turpentine • silicon paper • thinners • wax and grease remover.
Undercoats and primers include:	• acrylic undercoat • enamel undercoat • galvanised primer • wood primer.
Coating types include:	• acrylic lacquers and their thinner/reducer • clear finishes and their thinner • oil based paints and their solvents • spraying enamel and its thinner • two-pack paints and their thinner • water-based paints and their thinner.
Substrate includes:	• corflute

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RANGE STATEMENT

	• masonry • metal • plastics, including polyvinyl chloride (PVC) • rough finish • smooth finish • timber.

Statutory and regulatory authority requirements include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice and also can pertain to:
	  • removal of waste products
	  • storage of chemicals.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSI2004A Produce digital signage

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to produce digital signage.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills and knowledge to prepare for and produce signs using digital technology and equipment, and includes working with others and as a member of a team.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare work.	1.1. ***Quality assurance requirements*** of signage operations are recognised and adhered to. 1.2. ***Safety*** (***OHS***) requirements in accordance with application tasks and workplace operations are recognised and adhered to. 1.3. ***Job requirements*** are identified from drawings, specifications, instructions and client briefs. 1.4. Product range is assessed and selected in accordance with job requirements and ***relevant Australian standards***. 1.5. Tools, equipment and materials are selected to carry out tasks consistent with job requirements. 1.6. Routine maintenance requirements of equipment are identified and implemented in accordance with workplace and quality assurance procedures. 1.7. Temporary or permanent application of materials is determined from job requirements. 1.8. Potential material shrinkage is determined to ensure quality of completed work.
2. Work with files for digital output.	2.1. Image resolution is adjusted to suit output requirements. 2.2. Uncompressed ***file formats*** are used as required. 2.3. Files are stored safely and securely to maintain their integrity.
3. Use computer programs to produce designs for digital printing.	3.1. Observing design principles, appropriate ***software*** is selected to produce designs for digital printing and used according to manufacturer specifications to produce designs for digital printing. 3.2. Digital design is checked to ensure it is suitable for the media and purpose of the application.
4. Manage digital colour.	4.1. ***Digital colour management techniques*** are applied with principles of colour theory for signage and colour corrected where required. 4.2. Colour is adjusted using electronic aides and colour profiles for the job are maintained.
5. Select media and set up printer.	5.1. Media is selected appropriate to its usage and ***type of digital printing*** required. 5.2. Feed calibration is adjusted to suit given media. 5.3. Bi-directional calibration is adjusted to suit given media.

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ELEMENT	PERFORMANCE CRITERIA
	5.4. Print heads are monitored and adjusted when required.
6. Produce printed signage.	6.1. Characteristics and functions of raster image processor (RIP) are identified and applied.
	6.2. Correct profile for the media to be printed is selected to meet job requirements.
7. Laminate printed signage.	7.1. Characteristics and application of laminator and laminating media types are identified and selected to meet job requirements.
	7.2. Laminate is applied to digitally printed media to manufacturer specifications.
8. Clean up.	8.1. Equipment is cleaned, maintained and stored.
	8.2. Work area is cleaned and tidied.
	8.3. Waste materials are disposed of safely.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - charts and hand drawings
    - computer programs
    - job drawings
    - manufacturer specifications and instructions
    - organisational work specifications
    - requirements and instructions issued by authorised organisational or

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REQUIRED SKILLS AND KNOWLEDGE

external personnel
  - report faults
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- problem solving skills to recognise, and take action to rectify, minor faults and problems
- teamwork skills to be able to coordinate with others, action tasks and relate to people from a range of social, cultural, ethnic backgrounds and with varying physical and mental abilities
- using applicators and materials correctly to prepare surfaces.

Required knowledge

Required knowledge for this unit is:

- characteristics of different types of digital printing, including:
  - aqueous
  - dye sublimation
  - eco solvent
  - flatbed printers
  - grand format
  - thermal transfer
  - true solvent
  - ultraviolet (UV) printers
- colour theory principles
- laminating theory and methods
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- procedures for routine maintenance and cleaning of printers
- quality assurance requirements, including:
  - Australian and international standards relevant to the sign industry
  - internal company quality assurance policy and risk management strategies
  - workplace operations and procedures
- relevant Australian and New Zealand standards, and:
  - manufacturer specifications
  - OHS requirements
  - other applicable codes or standard operating procedures relevant to the sector
- statutory and regulatory authority requirements, particularly those relating to:
  - removal of waste products

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REQUIRED SKILLS AND KNOWLEDGE

- storage of chemicals
- terminology and definitions used in signage
- uncompressed file formats, such as:
  - EPS
  - PDF
  - RAW
  - TIFF.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of understanding and applying: • digital printing products of various types and characteristics • uncompressed file formats • digital colour management principles • media used in digital printing • printer set-up methods and procedures • laminating processes • RIP software • routine maintenance of printers.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to producing digital signage • support materials appropriate to activity • workplace instructions relating to producing

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EVIDENCE GUIDE

	digital signage • material safety data sheets • research resources, including industry-related systems information • range of digital printers • relevant software. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge • all assessment that is part of a structured learning experience must include a

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EVIDENCE GUIDE

combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Quality assurance requirements include:

- attention to work specifications
- Australian and international standards relevant to the sign industry
- control of handling procedures
- internal company quality assurance policy and risk management strategies
- procedures for installing and finishing
- quality of materials
- use and maintenance of equipment
- workplace operations and procedures.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- hazard control
- hazardous materials and substances
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices

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RANGE STATEMENT

	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of machines
	• use of tools and equipment
	• workplace environmental requirements and safety.

Job requirements include:	• assessment of conditions and hazards • determination of work requirements • equipment defect identification • safety plans and policies • work site inspection.
Relevant Australian standards include:	• regulatory requirements • standard drawings and details • urban design manuals.
File formats include:	• EPS files • PDF files • RAW files • TIFF files.
Software includes:	• Adobe Illustrator • Adobe Photoshop • CorelDraw • FlexiSign • RIP software.
Digital colour management techniques include:	• colour adjustment using electronic aides • colour correction • colour profiles maintenance • principles of colour theory.
Types of digital printing include:	• aqueous • dye sublimation

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RANGE STATEMENT

- eco solvent
- flatbed printers
- grand format
- thermal transfer
- true solvent
- UV printers.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSI2005A Fabricate signage

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to fabricate signage using acrylic or light metal materials.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills and knowledge for fabricating a range of acrylic signs, and includes working with others and as a member of a team.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare work.	1.1. ***Quality assurance requirements*** of signage operations are recognised and adhered to. 1.2. ***Safety*** (***OHS***) requirements in accordance with application tasks and workplace operations are recognised and adhered to. 1.3. ***Job requirements*** are identified from drawings, specifications, instructions and client briefs. 1.4. Product range is assessed and selected in accordance with job requirements and ***relevant Australian standards***. 1.5. ***Tools and equipment*** and ***materials*** are selected to carry out tasks consistent with job requirements. 1.6. Routine maintenance requirements of equipment is identified and implemented in accordance with workplace and quality assurance procedures. 1.7. Temporary or permanent application of materials is determined from job requirements.
2. Fabricate and assemble three-dimensional acrylic or light metal signage.	2.1. Correct materials for three-dimensional acrylic or light metal signage are identified and assembled for job. 2.2. CAD CAM routing equipment is correctly used to cut signage to job specifications. 2.3. Acrylic heating equipment is correctly selected and used to form acrylic signage safely and to design specifications. 2.4. Three-dimensional signage is correctly assembled using appropriate techniques. 2.5. Sign is assembled using ***attachments*** and techniques suitable for the signage materials.
3. Clean up finished sign.	3.1. Completed three-dimensional acrylic or light metal signage is trimmed to a professional finish. 3.2. Sign and surrounding surface environment/area are cleaned and waste materials removed in accordance with statutory and regulatory authority requirements. 3.3. Tools and equipment, including personal protective equipment, are cleaned, maintained and stored.

Required Skills and Knowledge

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to fabricate signage using correct applicators and materials
- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - charts and hand drawings
    - computer programs
    - job drawings
    - manufacturer specifications and instructions
    - organisational work specifications
    - requirements and instructions issued by authorised organisational or external personnel
  - report faults
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- organisational skills, including the ability to plan and set out work
- problem solving skills to recognise, and take action to rectify, minor faults and problems
- teamwork skills to be able to coordinate with others, action tasks and relate to people from a range of social, cultural, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- directory systems in signage manufacture
- extrusion systems used in signage manufacture
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)

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REQUIRED SKILLS AND KNOWLEDGE

- quality assurance requirements, including:
  - Australian and international standards relevant to the sign industry
  - internal company quality assurance policy and risk management strategies
  - workplace operations and procedures
- relevant Australian and New Zealand standards, and:
  - manufacturer specifications
  - OHS requirements
  - other applicable codes or standard operating procedures relevant to the sector
- statutory and regulatory authority requirements, particularly those relating to:
  - removal of waste products
  - storage of chemicals and materials
- terminology and definitions used in signage
- three-dimensional acrylic fabrication techniques.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of understanding and applying to fabrication of a range of signs: • acrylic fabrication materials and processes • light metal fabrication materials and processes.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to fabricating signage • support materials appropriate to activity • workplace instructions relating to fabricating signage • material safety data sheets • research resources, including industry-related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes

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where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated

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	documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Quality assurance requirements include:	• attention to work specifications • Australian and international standards relevant to the sign industry • control of handling procedures • internal company quality assurance policy and risk management strategies • procedures for installing and finishing • quality of materials • use and maintenance of equipment • workplace operations and procedures.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control

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RANGE STATEMENT

	• work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of machines • use of tools and equipment • workplace environmental requirements and safety.
Job requirements include:	• assessment of conditions and hazards • determination of work requirements • equipment defect identification • safety plans and policies • work site inspection.
Relevant Australian standards include:	• regulatory requirements • standard drawings and details • urban design manuals.
Tools and equipment include:	• acrylic glues • acrylic heating equipment • hand and power tools for metal fabrication • routing equipment (hand and CAD CAM) • substrate cutting equipment.
Materials include:	• acrylic • light weight metal.
Attachments include:	• fastenings • fixings.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Co-requisite units Nil

Functional area

Functional area

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CPCCSI2006A Signwrite to simple forms

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to manually write signs on a range of surfaces to design specifications.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills and knowledge to manually signwrite, and may include working with others and as a member of a team.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare work.	1.1. ***Quality assurance requirements*** of signage operations are recognised and adhered to. 1.2. ***Safety*** (***OHS***) requirements in accordance with application tasks and workplace operations are recognised and adhered to. 1.3. ***Job requirements*** are identified from drawings, specifications, instructions and client briefs. 1.4. Layout is set out to scale using setting out techniques applicable to sign design. 1.5. Product range is assessed and selected in accordance with job requirements and ***relevant Australian standards***. 1.6. ***Tools***, ***equipment*** and materials are selected to carry out tasks consistent with job requirements. 1.7. ***Substrates*** are identified and prepared in accordance with planned material application. 1.8. Colour selection is determined, consistent with job requirements. 1.9. Scaffold requirements are identified to comply with OHS regulations and safe work practices. 1.10. Routine maintenance requirements of equipment are identified and implemented in accordance with workplace and quality assurance procedures. 1.11. Temporary or permanent application of materials is determined from job requirements. 1.12. Potential material shrinkage is determined to ensure quality of completed work.
2. Apply layout methods for lettering.	2.1. Direct and indirect ***layout methods*** are identified and applied. 2.2. Pounce method of lettering is identified and applied.
3. Use signwriting equipment.	3.1. Mahl stick is used correctly, observing ergonomic principles. 3.2. Signwriting pencils and brushes and glass-marking pencils and pens are used correctly for signwriting application. 3.3. Work pots are used correctly and safely.
4. Draw alphabets and signwrite using a sign cutter.	4.1. Range of ***simple alphabets*** is constructed according to job specifications. 4.2. Principles of letter spacing are identified and

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ELEMENT	PERFORMANCE CRITERIA
	applied.
	4.3. Signwriting is applied using a sign cutter on uneven surfaces.
5. Clean up finished sign.	5.1. Sign and surrounding surface environment/area are cleaned and waste materials removed in accordance with ***statutory and regulatory authority requirements***.
	5.2. Tools and equipment, including personal protective equipment, are cleaned, maintained and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- ability to use correct applicators and materials
- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - charts and hand drawings
    - job drawings
    - manufacturer specifications and instructions
    - organisational work specifications
    - requirements and instructions issued by authorised organisational or external personnel
  - report faults
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- identification and use of appropriate material for application to substrate

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REQUIRED SKILLS AND KNOWLEDGE

- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- organisational skills, including the ability to plan and set out work
- problem solving skills to recognise, and take action to rectify, minor faults and problems
- sound techniques to design, set out and produce sign for designed signwriting
- teamwork skills to be able to coordinate with others, action tasks and relate to people from a range of social, cultural, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- alphabet construction
- identification of dimensions, symbols, abbreviations and key features of signage
- job safety analysis (JSA) and safe work method statements
- layout methods for signwriting
- layout of various types of lettering
- material safety data sheets (MSDS)
- signwriting equipment
- OHS requirements and relevant Australian standards, including:
  - AS1319 Safety signs for the occupational environment
  - AS1530.3 Fire retardant systems
- relevant Australian and New Zealand standards, AS2311 General workmanship - painting and AS2700 Colour range - painting, and:
  - manufacturer specifications
  - other applicable codes or standard operating procedures relevant to the sector
- statutory and regulatory authority requirements, particularly those relating to:
  - removal of waste products
  - storage of chemicals and materials
- terminology and definitions used in signage
- theory of letter spacing.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of understanding and applying to a range of signwriting tasks: • principles of layout • construction of alphabets • theory of letter spacing.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to signwriting to simple forms • support materials appropriate to activity • workplace instructions relating to signwriting to simple forms • material safety data sheets • research resources, including industry-related systems information. Reasonable adjustments for people with

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EVIDENCE GUIDE

	disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge • all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed. Supplementary evidence of competency may be

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EVIDENCE GUIDE

	obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Quality assurance requirements include:	• attention to work specifications • Australian and international standards relevant to the sign industry • control of handling procedures • internal company quality assurance policy and risk management strategies • procedures for installing and finishing • quality of materials • use and maintenance of equipment • workplace operations and procedures.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers

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RANGE STATEMENT

	• traffic control • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of machines • use of tools and equipment • workplace environmental requirements and safety.
Job requirements include:	• assessment of conditions and hazards • determination of work requirements • equipment defect identification • safety plans and policies • work site inspection.

Relevant Australian standards include:	• Australian standards:
	  • AS1319 Safety signs for the occupational environment
	  • AS1530.3 Fire retardant systems
	  • AS2311 General workmanship - painting
	  • AS2700 Colour range - painting
	• regulatory requirements
	• standard drawings and details
	• urban design manuals.

Tools and equipment include:	• cutting knives • Mahl stick • oils • signwriting pencils, pens and brushes • stirring sticks • tape measures and rulers • tapes • work pots.
Substrates include:	• corflute • glass • masonry • metals • plastics • wood.
Layout methods include:	• computer-generated layout

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RANGE STATEMENT

	• direct onto substrate • overhead projection • pounce method.
Simple alphabets include:	• block lettering • footed alphabets • freestyle alphabets • sans serif alphabets • script lettering • serif alphabets.

Statutory and regulatory authority requirements include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice and also can pertain to:
	  • removal of waste products
	  • storage of chemicals.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSI2007A Apply fasteners and fixings

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to apply proprietary fasteners and fixings in a range of fastening activities undertaken with a range of common construction materials.

Application of the Unit

Application of the unit This unit of competency supports the achievement of skills and knowledge covers to identify and use light gauge fasteners and fixings.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare work.	1.1. ***Quality assurance requirements*** of signage operations are recognised and adhered to. 1.2. ***Safety*** (***OHS***) requirements are in accordance with application tasks and workplace operations recognised and adhered to. 1.3. ***Job requirements*** are identified from drawings, specifications, instructions and client briefs. 1.4. Specifications, drawings and instructions interpreted and job requirements and sequence, determined. 1.5. ***Tools and equipment*** and materials are selected to carry out tasks consistent with job requirements. 1.6. ***Substrates*** are identified and prepared in accordance with planned material application. 1.7. Material safety data sheets (MSDS) are referred to as required.
2. Assess substrate and material to be fastened or fixed and apply fasteners and fixings.	2.1. Substrate is assessed for its compatibility with fasteners and fixings proposed to fix sign. 2.2. Material is assessed for its compatibility with proposed fasteners and fixings to be used. 2.3. Purpose of materials to be fastened or fixed is identified and assessed for tolerances. 2.4. ***Fasteners and fixings*** are applied according to manufacturer specifications.
3. Clean up finished sign.	3.1. Sign and surrounding surface environment/area are cleaned and waste materials are removed in accordance with ***statutory and regulatory authority requirements***. 3.2. Tools and equipment, including personal protective equipment, are cleaned, maintained and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

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REQUIRED SKILLS AND KNOWLEDGE

Required skills for this unit are:

- ability to correctly access and use substrate and materials
- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- ability to transfer measurements accurately from drawings to surfaces
- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret drawings, specifications and documentation from a variety of sources
  - report faults
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- organisational skills, including the ability to plan and set out work
- problem solving skills to recognise, and take action to rectify, minor faults and problems
- teamwork skills to be able to coordinate with others, action tasks and relate to people from a range of social, cultural, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- job safety analysis (JSA) and safe work method statements
- bonding ability of mechanical and chemical fasteners and fixings
- effect of mechanical and chemical products on substrates
- load bearing specifications for a range of fastener and fixing measurements and calculations related to material quantities
- MSDS
- relevant Australian and New Zealand standards, and:
  - manufacturer specifications
  - OHS requirements
  - other applicable codes or standard operating procedures relevant to the sector
- statutory and regulatory authority requirements, particularly those relating to:
  - removal of waste products
  - storage of chemicals and materials

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REQUIRED SKILLS AND KNOWLEDGE

- types and uses of tools and equipment relevant to fasteners and fixings.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of: • recognising the correct fastening and fixing method for particular substrates • using the appropriate fastener or fixing for safe and secure fastening.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to apply fasteners and fixings • support materials appropriate to activity • workplace instructions relating to applying fasteners and fixings • material safety data sheets • research resources, including industry-related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes

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EVIDENCE GUIDE

where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated

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EVIDENCE GUIDE

	documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

1.1. ***Quality assurance requirements*** include:	• attention to work specifications • Australian and international standards relevant to the sign industry • control of handling procedures • internal company quality assurance policy and risk management strategies • procedures for installing and finishing • quality of materials • use and maintenance of equipment • workplace operations and procedures.

1.2. ***Safety*** (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control

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RANGE STATEMENT

	• work site visitors and the public • working in confined spaces • working in proximity to others • use of firefighting equipment • use of machines • use of tools and equipment • workplace environmental requirements and safety.
1.3. ***Job requirements*** include:	• assessment of conditions and hazards • determination of work requirements • equipment defect identification • safety plans and policies • work site inspection.
1.4. ***Tools and equipment*** include:	• drafting equipment • drills • ladders • measuring tapes and rules • planks • pop rivets • scaffolding • screwdrivers • straight edges.
1.5. ***Substrates*** include:	• acrylic • corflute • glass • masonry • metal • plasterboard • timber.

1.6. ***Fasteners and fixings*** include:	• chemical fasteners, including:
	  • construction adhesive
	  • injection systems
	  • spin capsules
	  • hammer-in capsules
	• light duty anchors, including:
	  • electrical clips
	  • nylon anchors
	  • hollow wall anchors
	  • plastic toggles

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RANGE STATEMENT

	• metal toggles • multi-clips • medium duty anchors, including: • lug anchors • steel ferrule expanding bolts • screws, including: • metal screws • chipboard screws • plasterboard screws.
1.7. ***Statutory and regulatory authority requirements*** include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice and also can pertain to: • removal of waste products • storage of chemicals.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSI3001A Produce vinyl signage

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to produce visual signage in a variety of styles and shapes for attachment to surfaces.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills and knowledge to lay out and manufacture vinyl signs, and includes working with others and as a member of a team.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare work.	1.1. ***Quality assurance requirements*** of signage operations are recognised and adhered to. 1.2. ***Safety*** (***OHS***) requirements in accordance with application tasks and workplace operations are recognised and adhered to. 1.3. ***Job requirements*** are identified from drawings and specifications/instructions and/or ***client*** brief. 1.4. Specifications, drawings and instructions are interpreted and job requirements and sequence, determined. 1.5. Layout is set out to scale using setting out techniques applicable to sign design. 1.6. Product range is assessed and selected in accordance with job requirements and ***relevant Australian standards***. 1.7. ***Tools***, ***equipment*** and materials are selected to carry out tasks consistent with job requirements. 1.8. ***Substrates*** are identified and prepared in accordance with planned material application. 1.9. Colour selection is determined, consistent with job requirements. 1.10. Routine maintenance requirements of equipment are identified and implemented in accordance with workplace and quality assurance procedures. 1.11. Temporary or permanent application of materials is determined from job requirements. 1.12. Potential material shrinkage is determined to ensure quality of completed work.
2. Layout sign.	2.1. Substrate compatibility with ***vinyl*** is determined and correct vinyl type is identified according to job specifications. 2.2. Surface is appropriately cleaned and any previously applied self-adhesive tape is removed carefully, minimising risk of damage to surface.
3. Apply appropriate software to produce vinyl signage.	3.1. Layout of sign is produced on computer as per job specifications. 3.2. Cut files are prepared and configured correctly to plotter/output device.
4. Operate plotter.	4.1. Media is loaded onto plotter to ensure correct

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ELEMENT	PERFORMANCE CRITERIA
	tracking. 4.2. Cutting pressure and speed settings are adjusted to suit media. 4.3. Cut area dimensions are determined to suit given media. 4.4. ***Vinyl layout is cut*** using appropriate processes, tools and equipment to ensure minimum waste.
5. Apply vinyl.	5.1. Vinyl is applied and lettering or background is weeded out using appropriate tools and minimising risk of damage to vinyl. 5.2. Transfer or application tape is applied to either lettering or graphics and vinyl is applied to surface consistent with layout design to specifications. 5.3. Surface of vinyl is finished consistent with job requirements.
6. Clean up finished sign.	6.1. Sign and surrounding surface environment/area is cleaned and waste materials removed in accordance with ***statutory and regulatory authority requirements***. 6.2. Tools and equipment, including personal protective equipment, are cleaned, maintained and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:

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REQUIRED SKILLS AND KNOWLEDGE

    - design principles
    - job drawings
    - charts and hand drawings
    - manufacturer specifications and instructions
    - organisational work specifications
    - computer programs
    - requirements and instructions issued by authorised organisational or external personnel
  - report faults
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- organisational skills, including the ability to plan and set out work
- problem solving skills to recognise, and take action to rectify, minor faults and problems
- teamwork skills to be able to coordinate with others, action tasks and relate to people from a range of social, cultural, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- theory of cutting vinyl, including:
  - test cut requirements
  - function of plotters
  - blade offset setting
  - blade types
  - required cutting pressure
  - appropriate cutting speed
  - vinyl tracking characteristics
- relevant Australian and New Zealand standards, and:
  - manufacturer specifications
  - other applicable codes or standard operating procedures relevant to the sector
- terminology and definitions used in signage
- vinyl types and uses.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- understanding and applying:
  - principles of vinyl cutting to a range of signage jobs
  - vinyl material characteristics and composition when used in a signage job
  - attributes of vinyl when used in signage
- using appropriate computer software to produce vinyl signage.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to producing vinyl signage
- support materials appropriate to activity
- workplace instructions relating to producing vinyl signage
- material safety data sheets
- research resources, including industry-related

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EVIDENCE GUIDE

	systems information • range of digital printers • relevant software. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge • all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence. Assessment processes and techniques should as far

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EVIDENCE GUIDE

as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Quality assurance requirements include:

- attention to work specifications
- Australian and international standards relevant to the sign industry
- control of handling procedures
- internal company quality assurance policy and risk management strategies
- procedures for installing and finishing
- quality of materials
- use and maintenance of equipment
- workplace operations and procedures.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- hazard control
- hazardous materials and substances
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:

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RANGE STATEMENT

	• concealed services (water, power and gas) • lighting • restricted access barriers • traffic control • work site visitors and the public • working in confined spaces • working in proximity to others • use of firefighting equipment • use of machines • use of tools and equipment • workplace environmental requirements and safety.
Job requirements include:	• assessment of conditions and hazards • determination of work requirements • equipment defect identification • safety plans and policies • work site inspection.
Clients include:	• business owners • printers • property owners • sign manufacturers • statutory bodies.
Relevant Australian standards include:	• regulatory requirements • standard drawings and details • urban design manuals.
Tools and equipment include:	• application fluid • application tape • marking pencils • metal rules • squeegees • weeding tools.
Substrates include:	• corflute • glass surfaces • metals • plastics • vehicles.
Vinyl types include:	• calendared (polymeric/monomeric) • cast.
Vinyl layout cut includes:	• blade types

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RANGE STATEMENT

	• cutting pressure • cutting speed • function of plotters • test cut • vinyl tracking.

Statutory and regulatory authority requirements include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice and also can pertain to:
	  • removal of waste products
	  • storage of chemicals.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSI3002A Use rotary router

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to engrave signs using a laser or rotary router.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills and knowledge for using rotary routers in the manufacture of signs, and includes working with others and as a member of a team.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare work.	1.1. ***Quality assurance requirements*** of signage operations are recognised and adhered to. 1.2. ***Safety*** (***OHS***) requirements in accordance with application tasks and workplace operations are recognised and adhered to. 1.3. ***Job requirements*** are identified from drawings, specifications, instructions and client briefs. 1.4. Product range is assessed and selected in accordance with job requirements and ***relevant Australian standards***. 1.5. ***Tools and equipment*** and materials are selected to carry out tasks consistent with job requirements. 1.6. ***Routine maintenance*** requirements of equipment are identified and implemented in accordance with workplace and quality assurance procedures. 1.7. Temporary or permanent application of materials is determined from job requirements.
2. Work with materials and equipment.	2.1. Routing ***materials*** are selected according to job specifications. 2.2. Correct type of routing system to be used is selected according to job specifications and materials to be routed. 2.3. Cutter types and their applications are identified for the specified job. 2.4. Appropriate routing systems are used to rout on a range of surfaces.
3. Use software in engraving.	3.1. Appropriate software is selected and used to rout for the required signage job. 3.2. Software and equipment are used according to manufacturer specifications to rout cleanly and effectively.
4. Maintain cutters.	4.1. Cutters are sharpened using correct techniques. 4.2. Cutters are cleaned and stored safely and correctly after use.
5. Clean up.	5.1. Work area is cleaned and waste materials removed in accordance with ***statutory and regulatory authority requirements***. 5.2. Tools and equipment, including personal protective equipment, are cleaned, maintained and stored.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to prepare surfaces using correct applicators and materials
- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - charts and hand drawings
    - computer programs
    - job drawings
    - manufacturer specifications and instructions
    - organisational work specifications
    - requirements and instructions issued by authorised organisational or external personnel
  - report faults
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- organisational skills, including the ability to plan and set out work
- problem solving skills to recognise, and take action to rectify, minor faults and problems
- teamwork skills to be able to coordinate with others, action tasks and relate to people from a range of social, cultural, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

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REQUIRED SKILLS AND KNOWLEDGE

- job safety analysis (JSA) and safe work method statements
- maintenance of routers and cutters
- material safety data sheets (MSDS)
- relevant Australian and New Zealand standards, and:
  - manufacturer specifications
  - OHS requirements
  - other applicable codes or standard operating procedures relevant to the sector
- terminology and definitions used in routing
- theory of routing:
  - cutter types
  - guillotine systems
  - routing depths
  - routing materials and their uses
  - routing software
  - types of routing systems.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of understanding and applying: • characteristics and uses of routing materials and equipment in a range of signage jobs • uncompressed file formats used in signage • router set-up and safe use • correct and safe maintenance of routers and cutters.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to engrave using laser/rotary router • support materials appropriate to activity • workplace instructions relating to engraving using laser/rotary router • material safety data sheets • research resources, including industry-related

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EVIDENCE GUIDE

systems information
- relevant software.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language,

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EVIDENCE GUIDE

literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Quality assurance requirements include:

- attention to work specifications
- Australian and international standards relevant to the sign industry
- control of handling procedures
- internal company quality assurance policy and risk management strategies
- procedures for installing and finishing
- quality of materials
- use and maintenance of equipment
- workplace operations and procedures.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- hazard control
- hazardous materials and substances
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - concealed services (water, power and gas)

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RANGE STATEMENT

	• lighting • restricted access barriers • traffic control • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of machines • use of tools and equipment • workplace environmental requirements and safety.
Job requirements include:	• assessment of conditions and hazards • determination of work requirements • equipment defect identification • safety plans and policies • work site inspection.
Relevant Australian standards include:	• regulatory requirements • standard drawings and details • urban design manuals.
Tools and equipment include:	• laser routers • range of router cutting tools • rotary routers.
Routine maintenance includes:	• checking for damage or non-standard performance • cleaning.
Materials include:	• acrylic • laminated acrylic • medium density fibreboard (MDF).

Statutory and regulatory authority requirements include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice and also can pertain to:
	  • removal of waste products
	  • storage of chemicals.

Unit Sector(s)

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Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSI3003A Signwrite to decorative forms

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to manually signwrite to decorative forms using a range of techniques and materials.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills and knowledge to produce decorative signs manually and using specialist equipment, and may include working with others and as a member of a team.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare work.	1.1. ***Quality assurance requirements*** of signage operations are recognised and adhered to. 1.2. ***Safety*** (***OHS***) requirements in accordance with application tasks and workplace operations are recognised and adhered to. 1.3. ***Job requirements*** are identified from drawings, specifications, instructions and client briefs. 1.4. Specifications, drawings and instructions are interpreted and job requirements and sequence, determined. 1.5. Layout is set out to scale using setting out techniques applicable to sign design. 1.6. Product range is assessed and selected in accordance with job requirements and ***relevant Australian standards***. 1.7. ***Tools***, ***equipment*** and materials are selected to carry out tasks consistent with job requirements. 1.8. ***Substrates*** are identified and prepared in accordance with planned material application. 1.9. Colour selection is determined, consistent with job requirements. 1.10. Any scaffold requirements are identified to comply with OHS regulations and safe work practices. 1.11. Routine maintenance requirements of equipment are identified and implemented in accordance with workplace and quality assurance procedures. 1.12. Temporary or permanent application of materials is determined from job requirements.
2. Apply layout methods for lettering.	2.1. Direct and indirect ***layout methods*** are identified and applied. 2.2. Pounce method of lettering is identified and applied.
3. Use signwriting equipment.	3.1. Mahl stick and paint pot combination is used correctly observing ergonomic principles. 3.2. Signwriting pencils and brushes and marking pencils are used correctly.
4. Draw alphabets and add in letter decoration.	4.1. Range of ***decorative alphabets*** is used for the specified signwriting job. 4.2. Principles of letter spacing are identified and

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ELEMENT	PERFORMANCE CRITERIA
	applied.
	4.3. Range of ***on and off-face decorative effects*** are used where required by job specifications.
5. Clean up finished sign.	5.1. Sign and surrounding surface environment/area is cleaned and waste materials removed in accordance with ***statutory and regulatory authority requirements***.
	5.2. Tools and equipment, including personal protective equipment, are cleaned, maintained and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- ability to signwrite to decorative forms using correct applicators and materials
- applying signwriting using brush stokes
- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - charts and hand drawings
    - job drawings
    - manufacturer specifications and instructions
    - organisational work specifications
    - requirements and instructions issued by authorised organisational or external personnel
  - report faults
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences

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REQUIRED SKILLS AND KNOWLEDGE

- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- organisational skills, including the ability to plan and set out work
- problem solving skills to recognise, and take action to rectify, minor faults and problems
- teamwork skills to be able to coordinate with others, action tasks and relate to people from a range of social, cultural, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- alphabet construction
- identification of dimensions, symbols, abbreviations and key features of signage
- job safety analysis (JSA) and safe work method statements
- layout methods for signwriting
- layout of various types of lettering
- material safety data sheets (MSDS)
- OHS legislation applicable to workplace activity/operation
- signwriting equipment
- relevant Australian and New Zealand standards, and:
  - manufacturer specifications
  - OHS requirements
  - other applicable codes or standard operating procedures relevant to the sector
- statutory and regulatory authority requirements, particularly those relating to:
  - removal of waste products
  - storage of chemicals and materials
- sound techniques to produce layout accurately to balanced design
- terminology and definitions used in signage
- theory of letter spacing.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of understanding and applying in a range of signwriting activities: • principles of sign layout • construction of alphabets • theory of letter spacing • decorative techniques.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to signwriting to decorative forms • support materials appropriate to activity • workplace instructions relating to signwriting to decorative forms • material safety data sheets • research resources, including industry-related systems information.

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EVIDENCE GUIDE

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

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EVIDENCE GUIDE

	Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Quality assurance requirements include:	• attention to work specifications • Australian and international standards relevant to the sign industry • control of handling procedures • internal company quality assurance policy and risk management strategies • procedures for installing and finishing • quality of materials • use and maintenance of equipment • workplace operations and procedures.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers

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RANGE STATEMENT

	• traffic control • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of machines • use of tools and equipment • workplace environmental requirements and safety.
Job requirements include:	• assessment of conditions and hazards • determination of work requirements • equipment defect identification • safety plans and policies • work site inspection.

Relevant Australian standards include:	• Australian standards:
	  • AS2311 General workmanship - painting
	  • AS2700 Colour range - painting
	  • AS1530.3 Fire retardant systems
	  • AS1319 Safety signs for the occupational environment
	• regulatory requirements
	• standard drawings and details
	• urban design manuals.

Tools and equipment include:	• cutting knives • Mahl stick • oils • signwriting pencils, pens and brushes • stirring sticks • tape measures and rulers • tapes • work pots.
Substrates include:	• corflute • glass • masonry • metals • plastics • wood.
Layout methods include:	• computer-generated layout

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RANGE STATEMENT

	• direct onto substrate • overhead projection • pounce method.
Decorative alphabets include:	• formal script alphabets • freestyle alphabets • informal script alphabets • sans serif alphabets • serif alphabets.
On and off-face decorative effects include:	• 3-D effects • blocking • colour effects • shading.

Statutory and regulatory authority requirements include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice and also can pertain to:
	  • removal of waste products
	  • storage of chemicals.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCSI3004A Apply advanced vinyl applications

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to produce vinyl signage in advanced forms.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills and knowledge to apply vinyl sign materials using advanced techniques, and includes working with others and as a member of a team.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare work.	1.1. ***Quality assurance requirements*** of signage operations are recognised and adhered to. 1.2. ***Safety*** (***OHS***) requirements in accordance with application tasks and workplace operations are recognised and adhered to. 1.3. ***Job requirements*** are identified from drawings and specifications/instructions and/or ***client*** brief. 1.4. Specifications, drawings and instructions are interpreted and job requirements and sequence, determined. 1.5. Layout is set out to scale using setting out techniques applicable to sign design. 1.6. Product range is assessed and selected in accordance with job requirements and ***relevant Australian standards***. 1.7. ***Tools and equipment*** and materials are selected to carry out tasks consistent with job requirements. 1.8. ***Substrates*** are identified and prepared in accordance with planned material application. 1.9. Colour selection is determined, consistent with job requirements. 1.10. Routine maintenance requirements of equipment are identified and implemented in accordance with workplace and quality assurance procedures. 1.11. Temporary or permanent application of materials is determined from job requirements. 1.12. Potential material shrinkage is determined to ensure quality of completed work.
2. Layout sign.	2.1. Substrate compatibility with ***vinyl*** is determined and correct vinyl type identified according to job specifications. 2.2. Surface is appropriately cleaned and any previously applied self-adhesive tape is removed carefully, minimising risk of damage to surface. 2.3. ***Layout of sign*** is produced on computer as per job specifications. 2.4. Cut files are prepared and configured correctly to plotter/printer device, outputted and managed.
3. Operate plotter.	3.1. Media is loaded to ensure correct tracking and cutting pressure and speed settings are adjusted to

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ELEMENT	PERFORMANCE CRITERIA
	suit media.
	3.2. Cut area dimensions are determined to suit given media.
	3.3. ***Vinyl layout is cut*** using appropriate processes, tools and equipment to ensure minimum waste.
4. Operate digital printer.	4.1. Media is loaded to ensure correct tracking, and feed calibration is adjusted to suit given media.
	4.2. Bi-directional calibration is adjusted to suit given media.
	4.3. Print area dimensions are determined to suit given media and digital layout is printed using appropriate processes, tools and equipment to ensure minimum waste.
5. Apply vinyl.	5.1. Lettering or background is weeded out using appropriate tools and minimising risk of damage to vinyl.
	5.2. Transfer or application tape is applied to either lettering or graphics.
	5.3. Laminate is applied to printed vinyl and vinyl ***applied to surface*** free of air bubbles and creases and according to layout that conforms to design specifications.
	5.4. Surface of vinyl is finished and trimmed consistent with job requirements.
6. Clean up finished sign.	6.1. Sign and surrounding surface environment/area are cleaned and waste materials removed in accordance with ***statutory and regulatory authority requirements***.
	6.2. Tools and equipment, including personal protective equipment, are cleaned, maintained and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

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REQUIRED SKILLS AND KNOWLEDGE

- ability to apply layout and design concepts and principles
- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - charts and hand drawings
    - computer programs
    - design principles
    - job drawings
    - manufacturer specifications and instructions
    - organisational work specifications
    - requirements and instructions issued by authorised organisational or external personnel
  - report faults
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- organisational skills, including the ability to plan and set out work
- problem solving skills to recognise, and take action to rectify, minor faults and problems
- teamwork skills to be able to coordinate with others, action tasks and relate to people from a range of social, cultural, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- relevant Australian and New Zealand standards, and:
  - manufacturer specifications
  - other applicable codes or standard operating procedures relevant to the sector
- terminology and definitions used in signage
- theory of cutting vinyl, including:
  - blade offset setting

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REQUIRED SKILLS AND KNOWLEDGE

- blade types
- cutting pressure
- cutting speed
- function of plotters
- function of printers
- printer calibration settings
- purpose of test cut
- vinyl tracking
- vinyl types and uses in sign manufacture.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- understanding and applying:
  - principles of vinyl cutting
  - vinyl theory
  - attributes of vinyl
- applying appropriate software to produce vinyl signage
- correct and effective protocols for using computers and software
- applying vinyl to vehicle panels, free of air bubbles.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to producing vinyl signage
- support materials appropriate to activity
- workplace instructions relating to producing vinyl signage

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EVIDENCE GUIDE

- material safety data sheets
- research resources, including industry-related systems information
- range of digital printers
- relevant software.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and

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EVIDENCE GUIDE

supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Quality assurance requirements include:

- attention to work specifications
- Australian and international standards relevant to the sign industry
- control of handling procedures
- internal company quality assurance policy and risk management strategies
- procedures for installing and finishing
- quality of materials
- use and maintenance of equipment
- workplace operations and procedures.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- hazard control
- hazardous materials and substances
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the

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RANGE STATEMENT

	conduct of operational risk assessment and treatments associated with: • concealed services (water, power and gas) • lighting • restricted access barriers • traffic control • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of machines • use of tools and equipment • workplace environmental requirements and safety.
Job requirements include:	• assessment of conditions and hazards • determination of work requirements • equipment defect identification • safety plans and policies • work site inspection.
Clients include:	• business owners • printers • property owners • sign manufacturers • statutory bodies.
Relevant Australian standards include:	• regulatory requirements • standard drawings and details • urban design manuals.
Tools and equipment include:	• application fluid • application tape • applicators • coloured marking pencils • metal rules • weeding tools.
Substrates types include:	• corflute • glass surfaces • illuminated surfaces • metals • plastics

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RANGE STATEMENT

Vinyl includes:	• vehicle panels. • calendared (polymeric/monomeric) • cast • easy apply (vehicle wrap) • translucent.
Layout of sign includes:	• function of printers • printer calibration settings • test print • vinyl tracking.
Vinyl layout cut includes:	• blade types • cutting pressure • cutting speed • function of plotters • test cut • vinyl tracking.
Applied to surface includes:	• curved (irregular) • flat • illuminated.

Statutory and regulatory authority requirements include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice and also can pertain to:
	  • removal of waste products
	  • storage of chemicals.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCSI3005A Use engraving systems

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to engrave signs using laser or rotary routers.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills and knowledge for engraving for sign manufacture using specialist equipment, and includes working with others and as a member of a team.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare work.	1.1. ***Quality assurance requirements*** of signage operations are recognised and adhered to. 1.2. ***Safety*** (***OHS***) requirements in accordance with application tasks and workplace operations are recognised and adhered to. 1.3. ***Job requirements*** are identified from drawings, specifications, instructions and client briefs. 1.4. Product range is assessed and selected in accordance with job requirements and ***relevant Australian standards***. 1.5. ***Tools and equipment*** and materials are selected to carry out tasks consistent with job requirements. 1.6. Routine maintenance requirements of equipment are identified and implemented in accordance with workplace and quality assurance procedures. 1.7. Temporary or permanent application of materials is determined from job requirements. 1.8. Potential material shrinkage is determined to ensure quality of completed work.
2. Work with engraving materials and equipment.	2.1. ***Engraving materials*** to be used for specified job are identified and selected. 2.2. Types of engraving systems and cutter types appropriate to job specifications are identified and applied. 2.3. Appropriate engraving systems to engrave on flat or curved surfaces are used where required.
3. Use software in engraving and maintain cutters.	3.1. Appropriate software is selected to engrave sign and used when engraving according to manufacturer specifications. 3.2. Cutters are sharpened as required using correct techniques. 3.3. Cutters are cleaned and stored after use safely and correctly.
4. Clean up.	4.1. Work area is cleaned and waste materials removed in accordance with ***statutory and regulatory authority requirements***. 4.2. Tools and equipment, including personal protective equipment, are cleaned, maintained and stored.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - charts and hand drawings
    - computer programs
    - job drawings
    - manufacturer specifications and instructions
    - organisational work specifications
    - requirements and instructions issued by authorised organisational or external personnel
  - report faults
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- organisational skills, including the ability to plan and set out work
- problem solving skills to recognise, and take action to rectify, minor faults and problems
- teamwork skills to be able to coordinate with others, action tasks and relate to people from a range of social, cultural, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- job safety analysis (JSA) and safe work method statements
- maintenance of engravers and cutters
- material safety data sheets (MSDS)
- relevant Australian and New Zealand standards, and:

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REQUIRED SKILLS AND KNOWLEDGE

- manufacturer specifications
- OHS requirements
- other applicable codes or standard operating procedures relevant to the sector
- statutory and regulatory authority requirements, particularly those relating to removal of waste products
- terminology and definitions used in engraving
- theory of engraving, including:
  - cutter types
  - engraving depths
  - engraving materials and their uses
  - engraving software
  - guillotine systems
  - types of engraving systems.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of understanding and applying: • characteristics and uses of engraving materials and equipment • engraving set up • maintenance of engravers and cutters.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to engrave using laser/rotary router • support materials appropriate to activity • workplace instructions relating to engraving using laser/rotary router • material safety data sheets • research resources, including industry-related systems information • relevant software.

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EVIDENCE GUIDE

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

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EVIDENCE GUIDE

	Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Quality assurance requirements include:	• attention to work specifications • Australian and international standards relevant to the sign industry • control of handling procedures • internal company quality assurance policy and risk management strategies • procedures for installing and finishing • quality of materials • use and maintenance of equipment • workplace operations and procedures.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers

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RANGE STATEMENT

	• traffic control • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of machines • use of tools and equipment • workplace environmental requirements and safety.
Job requirements include:	• assessment of conditions and hazards • determination of work requirements • equipment defect identification • safety plans and policies • work site inspection.
Relevant Australian standards include:	• regulatory requirements • standard drawings and details • urban design manuals.
Tools and equipment include:	• cutting tools • laser routers • rotary routers.
Engraving materials include:	• acrylic • glass • metal.

Statutory and regulatory authority requirements include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice and also can pertain to:
	  • removal of waste products
	  • storage of chemicals.

Unit Sector(s)

Unit sector Construction

Co-requisite units

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Co-requisite units Nil

Functional area

Functional area

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CPCCSI3006A Apply gilding to signage

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to prepare background surfaces; masking, drafting and applying gilding to lettering, shapes, heraldic and other decorative forms of signage.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills and knowledge to gild signs and related materials, and includes working with others and as a member of a team.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare work.	1.1. ***Quality assurance requirements*** of signage operations are recognised and adhered to. 1.2. ***Safety*** (***OHS***) requirements in accordance with application tasks and workplace operations are recognised and adhered to. 1.3. ***Job requirements*** are identified from drawings, specifications, instructions and client briefs. 1.4. Specifications, drawings and instructions interpreted and job requirements and sequence, determined. 1.5. Layout set out to scale using setting out techniques applicable to sign design. 1.6. ***Gilding materials*** product range is assessed and selected in accordance with job requirements and ***relevant Australian standards***. 1.7. ***Tools and equipment*** and materials are selected to carry out tasks consistent with job requirements. 1.8. ***Substrates*** are identified and prepared in accordance with planned material application. 1.9. Routine maintenance requirements of equipment are identified and implemented in accordance with workplace and quality assurance procedures. 1.10. Potential material shrinkage is determined to ensure quality of completed work.
2. Identify and draw to scale lettering and decorative forms of signage.	2.1. Drafted designs are set out and drawn to appropriate scale and transferred to prepared surface using direct and indirect layout methods. 2.2. Decorative process is applied to create desired finish to specifications.
3. Use gilding tools and equipment.	3.1. Tools and equipment are selected for cutting and shaping process. 3.2. Materials are safely held in correct position ready for cutting and shaping operation.
4. Apply water gilding to signage.	4.1. Gilding material is cut to required size and shape as specified and ***sign surface*** is prepared to receive gilding. 4.2. Appropriate size is mixed, with colour added as designed and applied to prepared surface. 4.3. Gilding material is applied to surface and excess material is trimmed and removed. 4.4. Appropriate cleaning procedure and materials are

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ELEMENT	PERFORMANCE CRITERIA
	selected and applied to gilded sign surface.
5. Apply surface gilding to signage.	5.1. Size is applied carefully to surface using appropriate application techniques to contain within design. 5.2. Gilding material is applied to size using appropriate rubbing techniques, ensuring no gaps and design shape is fully covered. 5.3. Applied gilding leaf is burnished to ensure loose particles are removed. 5.4. Design shape is trimmed carefully where applicable, and appropriate cleaning procedure and materials are selected and applied to clean the gilded and surrounding surface.
6. Clean up finished gilded signage.	6.1. Sign and surrounding surface environment/area are cleaned and waste materials removed in accordance with ***statutory and regulatory authority requirements***. 6.2. Re-usable and recyclable materials are salvaged and stored. 6.3. Tools and equipment, including personal protective equipment, are cleaned, maintained and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- apply gilding operations:
  - cutting
  - melting
  - shaping
- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and

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REQUIRED SKILLS AND KNOWLEDGE

confirm requirements, share information, listen and understand
- follow instructions
- read and interpret:
  - charts and hand drawings
  - job drawings
  - manufacturer specifications and instructions
  - organisational work specifications
- report faults
- use and interpret non-verbal communication
- use language and concepts appropriate to cultural differences

- draft design of sign to scale
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- organisational skills, including the ability to plan and set out work
- prepare surfaces
- problem solving skills to recognise, and take action to rectify, minor faults and problems
- requirements and instructions issued by authorised organisational or external personnel
- teamwork skills to be able to coordinate with others, action tasks and relate to people from a range of social, cultural, ethnic backgrounds and with varying physical and mental abilities
- transfer design to location.

Required knowledge

Required knowledge for this unit is:

- design and layout of signs
- design transfer methods
- finishing techniques for gilding and gilded surfaces
- gilding materials and their characteristics
- gilding techniques
- handling materials relevant to gilding operations
- identification of dimensions, symbols, abbreviations and key features of signage
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- measuring and setting out relevant to layout of signs
- preparation of surfaces for gilding
- relevant Australian and New Zealand standards, and:
  - manufacturer specifications
  - OHS requirements

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REQUIRED SKILLS AND KNOWLEDGE

- other applicable codes or standard operating procedures relevant to the sector
- statutory and regulatory authority requirements, particularly those relating to:
  - removal of waste products
  - storage of chemicals and materials
- terminology and definitions used in signage
- traditional and contemporary font styles
- types and characteristics of tools and equipment used to apply water gilding
- types of metal leaf used for gilding.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- understanding and applying:
  - principles of surface preparation and application of gilding
  - construction of alphabets
  - theory of letter spacing
- sound techniques in preparing sign surface to receive gilding
- sound and accurate techniques to produce design to sign and gilding requirements.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying gilding
- support materials appropriate to activity
- workplace instructions relating to applying gilding
- material safety data sheets

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EVIDENCE GUIDE

- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in

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EVIDENCE GUIDE

relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Quality assurance requirements include:

- attention to work specifications
- Australian and international standards relevant to the sign industry
- control of handling procedures
- internal company quality assurance policy and risk management strategies
- procedures for installing and finishing
- quality of materials
- use and maintenance of equipment
- workplace operations and procedures.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- hazard control
- hazardous materials and substances
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - concealed services (water, power and gas)

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RANGE STATEMENT

	• lighting • restricted access barriers • traffic control • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of machines • use of tools and equipment • workplace environmental requirements and safety.
Job requirements include:	• assessment of conditions and hazards • determination of work requirements • equipment defect identification • safety plans and policies • work site inspection.

Gilding materials include:	• enamel paints or suitable paints for glass
	• loose leaf metals, such as:
	  • gold
	  • silver
	  • aluminium
	  • Dutch metal
	  • copper
	  • variegated leaf
	• water-based size.

Relevant Australian standards include:	• regulatory requirements • standard drawings and details • urban design manuals.
Tools and equipment include:	• cotton wool or velvet • gelatine • gilder's pad • gilding knife • gilding mop • gilding mug • gilding tip • heating pots • stove.

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RANGE STATEMENT

Substrates include:	• glass • metal • timber.
Sign surfaces include:	• glass • painted • sanded • sealed • stained.

Statutory and regulatory authority requirements include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice and also can pertain to:
	  • removal of waste products
	  • storage of chemicals.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSI3007A Apply lines and scrolls

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to set out and apply materials to produce various forms of line and scroll work on specified surfaces.

Application of the Unit

Application of the unit This unit of competency supports the achievement of skills and knowledge to apply painted or stencilled lines and scrolls on prepared surfaces, and includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare work.	1.1. ***Quality assurance requirements*** of signage operations are recognised and adhered to. 1.2. ***Safety*** (***OHS***) requirements in accordance with application tasks and workplace operations are recognised and adhered to. 1.3. ***Job requirements*** are identified from drawings, specifications, instructions and client briefs. 1.4. Specifications, drawings and instructions are interpreted, and job requirements and sequence are determined. 1.5. Shape and form of lines and scrolls are accurately checked from copy. 1.6. Line and scroll layout is set out using appropriate techniques. 1.7. Colour selection is determined, consistent with job requirements or to ***relevant Australian standards*** for general purposes. 1.8. ***Tools and equipment*** and materials are selected to carry out tasks consistent with job requirements. 1.9. Substrates are identified and prepared in accordance with planned material application and line work or scroll work ***application***. 1.10. Material safety data sheets (MSDS) are referred to as required.
2. Apply materials to layout.	2.1. ***Materials*** are applied to surface using application consistent with job requirements and layout of lines and scroll work. 2.2. ***Line work and scroll work*** are produced accurately to set out and specified colours.
3. Clean up finished sign.	3.1. Sign and surrounding surface environment/area are cleaned and waste materials removed in accordance with ***statutory and regulatory authority requirements***. 3.2. Tools and equipment, including personal protective equipment, are cleaned, maintained and stored.

Required Skills and Knowledge

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to apply lines and scrolls using correct applicators and materials
- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret drawings, specifications and documentation from a variety of sources
  - report faults
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- organisational skills, including the ability to plan and set out work
- problem solving skills to recognise, and take action to rectify, minor faults and problems
- select and record colours
- teamwork skills to be able to coordinate with others, action tasks and relate to people from a range of social, cultural, ethnic backgrounds and with varying physical and mental abilities
- transfer measurements from drawings to scroll work on surfaces.

Required knowledge

Required knowledge for this unit is:

- Australian standards:
  - AS1319 Safety signs for the occupational environment
  - AS2311 General workmanship - painting
- brushes used in line and scroll work
- colour selection techniques and principles
- design of line and scroll work
- job safety analysis (JSA) and safe work method statements
- materials relevant to drawings and specifications for scroll work on surfaces
- measurements and calculations related to material quantities

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REQUIRED SKILLS AND KNOWLEDGE

- measuring and setting out relevant to layout of signs
- MSDS
- relevant Australian and New Zealand standards, and:
  - manufacturer specifications
  - OHS requirements
  - other applicable codes or standard operating procedures relevant to the sector
- statutory and regulatory authority requirements, particularly those relating to:
  - removal of waste products
  - storage of chemicals and materials
- symbols, dimensions and terminology relating to scroll work on surfaces
- techniques in producing line work
- techniques in producing scroll work
- terminology and definitions used in signage
- types and uses of drawings and layouts used for line and scroll work on surfaces.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of:
	• accurately interpreting designs, drawings and job specifications for application of line and scroll work to a range of surfaces, including:
	  • flat surfaces
	  • curved surfaces.

Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to apply lines and scrolls • support materials appropriate to activity • workplace instructions relating to applying lines and scrolls • material safety data sheets • research resources, including industry-related systems information. Reasonable adjustments for people with

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EVIDENCE GUIDE

	disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge • all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed. Supplementary evidence of competency may be

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EVIDENCE GUIDE

	obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

1.1. ***Quality assurance requirements*** include:	• attention to work specifications • Australian and international standards relevant to the sign industry • control of handling procedures • internal company quality assurance policy and risk management strategies • procedures for installing and finishing • quality of materials • use and maintenance of equipment • workplace operations and procedures.

1.2. ***Safety*** (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers

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RANGE STATEMENT

	• traffic control • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
1.3. ***Job requirements*** include:	• assessment of conditions and hazards • determination of work requirements • equipment defect identification • safety plans and policies • work site inspection.
1.4. ***Relevant Australian standards*** include:	• AS2700 Colour range - painting • AS1319 Safety signs for the occupational environment • AS2311 General workmanship - painting • regulatory requirements • standard drawings and details • urban design manuals.
1.5. ***Tools and equipment*** include:	• artist brushes • dagger liners • drafting equipment • guides • ladders • lining fitches • measuring tapes and rules • planks • pots • quill liners • rollers • scaffolding • spray equipment • stirrers • straight edges • templates.
1.6. ***Application*** includes:	• brush with lining or template guide • freehand brush application • spray, roller and brush application to substrate.

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RANGE STATEMENT

1.7. ***Materials*** include:	• acrylic paint • enamel paint • water-based paints.
1.8. ***Line work and scroll work*** include:	• arrowed • bull nosed • curled • square end • tapered.

1.9. ***Statutory and regulatory authority requirements*** include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice and also can pertain to:
	  • removal of waste products
	  • storage of chemicals.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSI3008A Write showcards and chalkboards

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to manually write showcards and chalkboards for commercial purposes.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills and knowledge to manually write showcards and chalkboards.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare work.	1.1. ***Quality assurance requirements*** of signage operations are recognised and adhered to. 1.2. ***Safety*** (***OHS***) requirements in accordance with application tasks and workplace operations are recognised and adhered to. 1.3. ***Job requirements*** are identified from drawings, specifications, instructions and client briefs. 1.4. Spelling of brief content is checked from copy and confirmed as correct. 1.5. Layout is set out to scale using setting out techniques applicable to sign design. 1.6. ***Tools***, ***equipment*** and ***materials*** are selected to carry out tasks consistent with job requirements. 1.7. ***Substrates*** are identified and prepared in accordance with planned material application. 1.8. Colour selection is determined, consistent with job requirements.
2. Use correct layout principles to maximise 3. impact.	3.1. Type of formal or informal layout is determined from specifications, ***client*** brief and ***relevant Australian standards***. 3.2. Correct ***principles of layout*** are identified and applied in line with given brief.
4. Identify materials and methods of application for effective showcards/ chalkboards.	4.1. Substrates, backgrounds, materials and equipment used in preparation are identified and applied. 4.2. Compatible surfaces, paints, mediums and various methods of their application for showcards/chalkboards are identified and applied. 4.3. Appropriate and effective colour combinations for showcards/chalkboards are identified and applied.
5. Develop layout roughs and sketches from specifications.	5.1. Job specifications are established from specified material. 5.2. Sketches are produced as required to meet job specifications.
6. Produce showcards/chalkboard s using effective layout and illustrations from sketched roughs.	6.1. Layout design is produced to specifications from layout roughs and sketches. 6.2. Appropriate drawing instruments, mediums and background materials are selected and prepared. 6.3. Layout is produced incorporating lettering and illustrations and using appropriate techniques and mediums.

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ELEMENT	PERFORMANCE CRITERIA
	6.4. Accurate proportion and perspective are applied to the illustration using light and shade effects.
	6.5. Completed work is cleaned and presented to specification.
7. Clean up.	7.1. Work environment/area is cleaned and waste materials removed in accordance with ***statutory and regulatory authority requirements***.
	7.2. Tools and equipment, including personal protective equipment, are cleaned, maintained and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - charts and hand drawings
    - job drawings
    - manufacturer specifications and instructions
    - organisational work specifications
    - requirements and instructions issued by authorised organisational or external personnel.
  - report faults
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action

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REQUIRED SKILLS AND KNOWLEDGE

- interpret drawings and documentation and make sketches of work
- measure accurately and calculate material quantities
- organisational skills, including the ability to plan and set out work
- problem solving skills to recognise, and take action to rectify, minor faults and problems
- select and record colours
- teamwork skills to be able to coordinate with others, action tasks and relate to people from a range of social, cultural, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- colour selection techniques and principles
- commonly used drawings and layouts for showcards/chalkboards
- designs of showcards/chalkboards
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- measurement and calculation techniques related to material quantities
- measuring and setting out methods relevant to layout of showcards/chalkboards
- statutory and regulatory authority requirements, particularly those relating to:
  - removal of waste products
  - storage of chemicals and materials
- symbols, dimensions and terminology relating to showcards/chalkboards
- techniques for writing tickets and showcards/chalkboards
- types and characteristics of brushes and applicators relevant to showcards/chalkboards
- types and use of appropriate materials for application to substrates.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate

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EVIDENCE GUIDE

	construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of:
	• understanding and applying:
	  • principles of layout
	  • construction of alphabets
	  • theory of letter spacing
	• identification of dimensions, symbols, abbreviations and key features of signage
	• sound checking techniques to ensure spelling and dates are correct
	• sound and accurate application to produce design to colours and specification
	• identification of typical faults or problems that occur and action required to rectify them.

Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to writing showcards/chalkboards • support materials appropriate to activity • workplace instructions relating to writing showcards/chalkboards • material safety data sheets • research resources, including industry-related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources,

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EVIDENCE GUIDE

and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

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Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

1.1. ***Quality assurance requirements*** include:

- attention to work specifications
- Australian and international standards relevant to the sign industry
- control of handling procedures
- internal company quality assurance policy and risk management strategies
- procedures for installing and finishing
- quality of materials
- use and maintenance of equipment
- workplace operations and procedures.

1.2. ***Safety*** (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- hazard control
- hazardous materials and substances
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - concealed services (water, power and gas)
  - lighting
  - restricted access barriers
  - traffic control
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
- use of firefighting equipment

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RANGE STATEMENT

	• use of machines • use of tools and equipment • workplace environmental requirements and safety.
1.3. ***Job requirements*** include:	• assessment of conditions and hazards • determination of work requirements • equipment defect identification • safety plans and policies • work site inspection.
1.4. ***Tools and equipment*** include:	• brushes • drawing equipment • roller and tray • omnichrome pencil • measuring equipment.
1.5. ***Materials*** include:	• adhesives • blackboard paint • crayons • felt tip pens • fixatives • pastels • polyvinyl acetate (PVA) paints • transfer paper.
1.6. ***Substrates*** include:	• card • chalkboard surfaces to include composite timber substrates, such as medium density fibreboard (MDF) and masonite • corflute • paper • tyvek.
1.7. ***Clients*** include:	• advertising agencies • business owners • marketing agencies • property owners • retail outlets • sign manufacturers • statutory bodies.
1.8. ***Relevant Australian standards*** include:	• AS1319 Safety signs for the occupational environment • AS2311 General workmanship - painting • AS2700 Colour range - painting.

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RANGE STATEMENT

1.9. ***Principles of layout*** include:	• balance • colour • contrast • harmony • letter styles • space.

1.10. ***Statutory and regulatory authority requirements*** include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice and also can pertain to:
	  • removal of waste products
	  • storage of chemicals.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSI3009A Screen-print signage

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to prepare screens and apply paint to sign faces, creating decoratively designed signs.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills and knowledge to prepare printing screens and screen-print, and includes working with others and as a member of a team.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare work.	1.1. ***Quality assurance requirements*** of signage operations are recognised and adhered to. 1.2. ***Safety*** (***OHS***) requirements in accordance with application tasks and workplace operations are recognised and adhered to. 1.3. ***Job requirements*** are identified from drawings, specifications, instructions and client briefs. 1.4. Specifications, drawings and instructions are interpreted and job requirements and sequence, determined. 1.5. Design for printing is identified and accurately reproduced for screen face. 1.6. Product range is assessed and selected in accordance with job requirements and ***relevant Australian standards***. 1.7. ***Tools and equipment*** and materials are selected to carry out tasks consistent with job requirements. 1.8. ***Material*** to be screen-printed is prepared and located to position for printing. 1.9. Material for screen face is marked by transferring design and is cut accurately to set out shape. 1.10. Colours of paint or ink are selected and tested to match specification. 1.11. Multiple screen-printing is identified and number of screens required, determined and produced to specifications. 1.12. Material safety data sheet (MSDS) requirements are determined and followed. 1.13. Routine maintenance requirements of equipment are identified and implemented in accordance with workplace and quality assurance procedures.
2. Screen-print.	2.1. Stencils/screens are prepared and manufactured to job specification. 2.2. Paint or ink is prepared to specification ready for application. 2.3. Printing process is set up for operation with material and screen aligned to specification. 2.4. Screens are printed onto ***substrates*** to achieve accurate registration in accordance with job specification.

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ELEMENT	PERFORMANCE CRITERIA
3. Identify and solve problems.	3.1. Painting application problems and faults are resolved by reference to painting manuals and manufacturer instructions.
4. Clean up finished sign.	4.1. Sign and surrounding surface environment/area cleaned and waste materials removed in accordance is with ***statutory and regulatory authority requirements***.
	4.2. Tools and equipment, including personal protective equipment, are cleaned, maintained and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - charts and hand drawings
    - job drawings
    - manufacturer specifications and instructions
    - organisational work specifications
    - requirements and instructions issued by authorised organisational or external personnel
  - report faults
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- draft design of sign to scale
- innovation skills to select appropriate tools and equipment, respond to workplace

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REQUIRED SKILLS AND KNOWLEDGE

challenges and put ideas into action
- organisational skills, including the ability to plan and set out work
- problem solving skills to recognise, and take action to rectify, minor faults and problems
- teamwork skills to be able to coordinate with others, action tasks and relate to people from a range of social, cultural, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- colour selection techniques and principles
- design transfer methods
- designs of signs
- identification of dimensions, symbols, abbreviations and key features of signage
- job safety analysis (JSA) and safe work method statements
- layout of signs principles
- MSDS
- process for manufacture of screens
- relevant Australian and New Zealand standards:
  - AS1319 Safety signs for the occupational environment
  - AS2311 General workmanship - painting
  - AS2700 Colour range - painting
  - manufacturer specifications
  - OHS requirements
  - other applicable codes or standard operating procedures relevant to the sector
- screen-printing techniques and uses
- statutory and regulatory authority requirements, particularly those relating to:
  - removal of waste products
  - storage of chemicals and materials
- techniques for cutting designs for screens
- traditional and contemporary font styles
- terminology and definitions used in screen-printing.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- sound procedures to accurately reproduce a design for screen-printing
- sound techniques to transfer design to material for screen
- accurate and safe techniques to cut screen design to shape
- sound and safe procedures to construct screen ready for printing
- sound techniques in identifying and recording colours
- application of material accurately to sign surface for printing
- sound techniques to apply paint or ink to print from screen
- identification of typical faults and appropriate remedial action taken to rectify problem.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the

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EVIDENCE GUIDE

mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to screen-printing
- support materials appropriate to activity
- workplace instructions relating to screen-printing
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete

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EVIDENCE GUIDE

confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Quality assurance requirements include:

- attention to work specifications
- Australian and international standards relevant to the sign industry
- control of handling procedures
- internal company quality assurance policy and risk management strategies
- procedures for installing and finishing
- quality of materials
- use and maintenance of equipment
- workplace operations and procedures.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- hazard control

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RANGE STATEMENT

include:	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of machines
	• use of tools and equipment
	• workplace environmental requirements and safety.

Job requirements include:	• assessment of conditions and hazards • determination of work requirements • equipment defect identification • safety plans and policies • work site inspection.

Relevant Australian standards include:	• Australian standards:
	  • AS2311 General workmanship - painting
	  • AS2700 Colour range - painting
	  • AS1319 Safety signs for the occupational environment
	• regulatory requirements
	• standard drawings and details
	• urban design manuals.

Tools and equipment include:	• drying racks • inks and paints • kick leg • palette knife • screen • screening table • squeegee

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RANGE STATEMENT

Material includes:	• steel rule • stencil knife. • block out • masking tape • screen frames • silk • spray adhesive • stencil films • cardboard.
Substrates include:	• glass • materials, such as T-shirts • metals • paper • plastics • wood.

Statutory and regulatory authority requirements include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice and also can pertain to:
	  • removal of waste products
	  • storage of chemicals.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCSI3010A Hand render pictorials

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to produce and lay out signs that form hand-rendered pictorial images on a range of substrates as part of signage installations.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills and knowledge to manually render pictorials for sign manufacture, and includes working with others and as a member of a team.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare work.	1.1. ***Quality assurance requirements*** of signage operations are recognised and adhered to. 1.2. ***Safety*** (***OHS***) requirements in accordance with application tasks and workplace operations are recognised and adhered to. 1.3. Specifications, drawings and instructions interpreted and ***job requirements*** and sequence, are determined. 1.4. Material quantities are estimated in accordance with size of sign and materials to be used. 1.5. Sample is accurately checked from copy and ***substrates*** identified and prepared in accordance with planned material application. 1.6. ***Tools and equipment*** and materials selected to carry out tasks consistent with job requirements and ***relevant Australian standards***. 1.7. Layout is set out to scale using appropriate setting out techniques. 1.8. Colour selection is determined, consistent with job requirements. 1.9. Material safety data sheets (MSDS) are referred to as required. 1.10. Routine maintenance requirements of equipment are identified and implemented in accordance with workplace and quality assurance procedures.
2. Identify materials and methods of application for effective pictorial signage.	2.1. Substrates, backgrounds, materials and equipment used in preparation for pictorial signs are identified and assembled. 2.2. Compatible surfaces, paints, solvents, mediums and various methods of their application for pictorials are identified and applied. 2.3. Appropriate colour combinations in the effectiveness of colour on/for pictorials are identified and applied. 2.4. Methods of transferring and reproducing pictorials are identified and applied.
3. Produce effective drawn illustrations for pictorial signage.	3.1. Appropriate drawing instruments, mediums and background materials are selected and prepared. 3.2. Given illustrations are reproduced using appropriate drawing techniques, applying appropriate and accurate proportion and perspective. 3.3. Light and shade effects to given illustration creating

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ELEMENT	PERFORMANCE CRITERIA
	visual realism are applied using appropriate technique suitable to the selected medium.
4. Apply mediums to paint illustrations.	4.1. Appropriate mediums and equipment are selected and applied to produce various ***painting techniques***. 4.2. Accurate visual texture, light and shade are achieved. 4.3. Appropriate colours are determined and applied, achieving correct tones and tonal order. 4.4. Lettering/letter decoration and illustration are applied to pictorial sign accurately and cleanly.
5. Clean up finished sign.	5.1. Sign and surrounding surface environment/area is cleaned and waste materials removed in accordance with ***statutory and regulatory authority requirements***. 5.2. Tools and equipment, including personal protective equipment, are cleaned, maintained and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - charts and hand drawings
    - job drawings
    - manufacturer specifications and instructions
    - organisational work specifications
    - requirements and instructions issued by authorised organisational or

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REQUIRED SKILLS AND KNOWLEDGE

external personnel
  - report faults
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- interpret drawings and documentation
- measure accurately
- organisational skills, including the ability to plan and set out work
- problem solving skills to recognise, and take action to rectify, minor faults and problems
- select and record colours
- teamwork skills to be able to coordinate with others, action tasks and relate to people from a range of social, cultural, ethnic backgrounds and with varying physical and mental abilities
- transfer measurements from drawings to sign in pictorial forms.

Required knowledge

Required knowledge for this unit is:

- Australian standards:
  - AS2311 General workmanship - painting
  - AS2700 Colour range - painting
- application techniques with paint
- colour selection
- commonly used drawings and layouts for signs
- identification of dimensions, symbols, abbreviations and key features of signage
- job safety analysis (JSA) and safe work method statements
- measure and set out relevant to layout of signs
- measurements and calculations related to material quantities
- MSDS
- pictorial designs and reproduction
- statutory and regulatory authority requirements, particularly those relating to:
  - removal of waste products
  - storage of chemicals and materials
- symbols, dimension and terminology relating to signage
- techniques to set out sign for designed signwriting
- terminology and definitions used in signage.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- understanding and applying:
  - principles of layout
  - construction of alphabets
  - theory of letter spacing
- identification of dimensions, symbols, abbreviations and key features of signage
- identification and correct application of designed material to substrate
- sound and accurate techniques to reproduce pictorial to size requirements
- appropriate techniques to identify and record colours
- sound techniques to produce colour fully to boundary limits
- completion of pictorial to design and specifications.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions

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EVIDENCE GUIDE

- tools and equipment appropriate to hand rendering pictorials
- support materials appropriate to activity
- workplace instructions relating to hand rendering pictorials
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

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EVIDENCE GUIDE

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Quality assurance requirements include:

- attention to work specifications
- Australian and international standards relevant to the sign industry
- control of handling procedures
- internal company quality assurance policy and risk management strategies
- procedures for installing and finishing
- quality of materials
- use and maintenance of equipment
- workplace operations and procedures.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- hazard control
- hazardous materials and substances
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:

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RANGE STATEMENT

	• concealed services (water, power and gas) • lighting • restricted access barriers • traffic control • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of machines • use of tools and equipment • workplace environmental requirements and safety.
Job requirements include:	• assessment of conditions and hazards • determination of work requirements • equipment defect identification • safety plans and policies • work site inspection.
Substrates include:	• canvas • glass • metal • paper • timber.
Tools and equipment include:	• artist brushes • charcoal • easel • mediums • oil and acrylic paints • pencils • sketch pad.
Relevant Australian standards include:	• AS2311 General workmanship - painting • regulatory requirements • AS2700 Colour range - painting • standard drawings and details • urban design manuals.
Painting techniques include:	• posterisation • scumbling • stippling • wet blend.

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RANGE STATEMENT

Statutory and regulatory authority requirements include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice and also can pertain to: • removal of waste products • storage of chemicals.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSI3011A Use LED technology for signage

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to use light emitting diode (LED) technology for signage.

No licensing (less than 240 volts), legislative, regulatory or certification requirements apply to this unit at the time of publication.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills and knowledge to use LED technology and equipment, and includes working with others and as a member of a team.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare work.	1.1. ***Quality assurance requirements*** of signage operations are recognised and adhered to. 1.2. ***Safety*** (***OHS***) requirements in accordance with application tasks and workplace operations are recognised and adhered to. 1.3. ***Job requirements*** are identified from drawings and specifications/instructions and/or ***client*** brief. 1.4. Product range assessed and selected in accordance with job requirements and ***relevant Australian standards***. 1.5. ***Tools and equipment*** and materials are selected to carry out tasks consistent with job requirements. 1.6. Routine maintenance requirements of equipment are identified and implemented in accordance with workplace and quality assurance procedures. 1.7. Temporary or permanent application of materials is determined from job requirements. 1.8. Potential material shrinkage is determined to ensure quality of completed work.
2. Use LED technology.	2.1. LED systems appropriate to specified job are identified and evaluated for use. 2.2. LED system packages available for the work are identified, evaluated and appropriate choices are made. 2.3. LED semi-conductor chip technology and characteristics are evaluated for the specified application. 2.4. LED colour systems are identified and applied in the appropriate environments. 2.5. Expected lifetime of different LED systems is evaluated and communicated to clients. 2.6. Electrical current feed to the LED system is regulated according to manufacturer specifications. 2.7. Heat emanating from LED signage systems is calculated and managed according to manufacturer specifications.
3. Clean up finished sign.	3.1. Sign and surrounding surface environment/area is cleaned and waste materials removed in accordance with ***statutory and regulatory authority requirements***. 3.2. Tools and equipment, including personal protective

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ELEMENT	PERFORMANCE CRITERIA
	equipment, are cleaned, maintained and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to calculate heat from LED systems and apply appropriate managing techniques
- ability to evaluate and use a variety of LED systems for correct signage applications
- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - charts and hand drawings
    - job drawings
    - manufacturer specifications and instructions
    - organisational work specifications
    - requirements and instructions issued by authorised organisational or external personnel
  - report faults
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- organisational skills, including the ability to plan and set out work
- problem solving skills to recognise, and take action to rectify, minor faults and problems
- teamwork skills to be able to coordinate with others, action tasks and relate to people from a range of social, cultural, ethnic backgrounds and with varying

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REQUIRED SKILLS AND KNOWLEDGE

physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- job safety analysis (JSA) and safe work method statements
- LED colour types and limitations
- LED components
- LED lifetime characteristics
- LED semi-conductor chip technology characteristics
- LED systems and system packages
- management of heat in LED signage
- material safety data sheets (MSDS)
- regulation of electrical current in LED systems
- relevant Australian and New Zealand standards, and:
  - manufacturer specifications
  - OHS requirements
  - other applicable codes or standard operating procedures relevant to the sector
- statutory and regulatory authority requirements, particularly those relating to:
  - removal of waste products
  - storage of chemicals and materials
- terminology and definitions used in signage.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- understanding of and techniques for evaluating and using:
  - LED systems and packages
  - LED components
  - regulation of electrical current in LED systems
- management of heat in LED signage.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to using LED technology for illuminated signage
- support materials appropriate to activity
- workplace instructions relating to using LED technology for illuminated signage
- material safety data sheets
- research resources, including industry-related systems information.

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EVIDENCE GUIDE

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

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EVIDENCE GUIDE

	Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Quality assurance requirements include:	• attention to work specifications • Australian and international standards relevant to the sign industry • control of handling procedures • internal company quality assurance policy and risk management strategies • procedures for installing and finishing • quality of materials • use and maintenance of equipment • workplace operations and procedures.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers

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RANGE STATEMENT

	• traffic control • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of machines • use of tools and equipment • workplace environmental requirements and safety.
Job requirements include:	• assessment of conditions and hazards • determination of work requirements • equipment defect identification • safety plans and policies • work site inspection.
Clients include:	• business owners • printers • property owners • sign manufacturers • statutory bodies.
Relevant Australian standards include:	• regulatory requirements • standard drawings and details • urban design manuals.
Tools and equipment include:	• circuit testing equipment • electrical connection tools • hand and power tools.
Statutory and regulatory authority requirements include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice and also can pertain to: • removal of waste products • storage of chemicals.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSI3012A Apply electrical theory for illuminated signage

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to apply electrical theory for signage applications.

No licensing (less than 240 volts), legislative, regulatory or certification requirements apply to this unit at the time of publication.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills and knowledge to use appropriate electrical theory in manufacturing illuminated signs

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare work.	1.1. ***Quality assurance requirements*** of signage operations are recognised and adhered to. 1.2. ***Safety*** (***OHS***) requirements in accordance with application tasks and workplace operations are recognised and adhered to. 1.3. ***Job requirements*** are identified from drawings, specifications, instructions and ***client*** brief. 1.4. Illuminated signage product range is assessed and selected in accordance with job requirements and ***relevant Australian standards***.
2. Apply electrical principles for illuminated signage.	2.1. Properties and availability of electricity as the energy source are identified and evaluated for specified job. 2.2. ***Characteristics of electricity*** are applied to the illuminated sign activity carried out. 2.3. Power consumption of illuminated signage types is evaluated and communicated to clients.
3. Clean up finished sign.	3.1. Sign and surrounding surface environment/area are cleaned and waste materials removed in accordance with ***statutory and regulatory authority requirements***. 3.2. Tools and equipment, including personal protective equipment, are cleaned, maintained and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand

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REQUIRED SKILLS AND KNOWLEDGE

- follow instructions
- read and interpret:
  - charts and hand drawings
  - job drawings
  - manufacturer specifications and instructions
  - organisational work specifications
  - requirements and instructions issued by authorised organisational or external personnel
- report faults
- use and interpret non-verbal communication
- use language and concepts appropriate to cultural differences

- calculate electrical loads and necessary supply conditions for illuminated and LED sign installations
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- organisational skills, including the ability to plan and set out work
- problem solving skills to recognise, and take action to rectify, minor faults and problems
- teamwork skills to be able to coordinate with others, action tasks and relate to people from a range of social, cultural, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- characteristics of electricity:
  - current
  - voltage
  - circuits:
    - series
    - parallel
    - series-parallel
  - watts
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- power consumption in illuminated signage
- regulation of electrical current in illuminated signage
- relevant Australian and New Zealand standards, and:
  - manufacturer specifications
  - OHS requirements

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REQUIRED SKILLS AND KNOWLEDGE

- other applicable codes or standard operating procedures relevant to the sector
- statutory and regulatory authority requirements, particularly those relating to:
  - removal of waste products
  - storage of chemicals and materials
- terminology and definitions used in signage.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of understanding and applying: • electrical theory to a range of illuminated sign installations, including light emitting diode (LED).
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying electrical theory to illuminated signage • support materials appropriate to activity • workplace instructions relating to applying electrical theory to illuminated signage • material safety data sheets • research resources, including industry-related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes

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EVIDENCE GUIDE

where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated

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EVIDENCE GUIDE

	documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Quality assurance requirements include:	• attention to work specifications • Australian and international standards relevant to the sign industry • control of handling procedures • internal company quality assurance policy and risk management strategies • procedures for installing and finishing • quality of materials • use and maintenance of equipment • workplace operations and procedures.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control

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RANGE STATEMENT

	• work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of machines • use of tools and equipment • workplace environmental requirements and safety.
Job requirements include:	• assessment of conditions and hazards • determination of work requirements • equipment defect identification • safety plans and policies • work site inspection.
Client includes:	• business owners • printers • property owners • sign manufacturers • statutory bodies.
Relevant Australian standards include:	• regulatory requirements • standard drawings and details • urban design manuals.

Characteristics of electricity include:	• circuits:
	  • series
	  • parallel
	  • series-parallel
	• current
	• voltage
	• watts.

Statutory and regulatory authority requirements include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice and also can pertain to:
	  • removal of waste products
	  • storage of chemicals.

Unit Sector(s)

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Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSI3013A Install LED systems

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to install light emitting diode (LED) signs.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills and knowledge for installing LED signs, and includes working with others and as a member of a team.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare work.	1.1. ***Quality assurance requirements*** of signage operations are recognised and adhered to. 1.2. ***Safety*** (***OHS***) requirements in ***accordance*** with application tasks and workplace operations are recognised and adhered to. 1.3. ***Job requirements*** are identified from drawings, specifications, instructions and client briefs. 1.4. Product range is assessed and ***selected*** in accordance with job requirements and ***relevant Australian standards***. 1.5. ***Tools and equipment*** and materials are selected to carry out tasks consistent with job requirements. 1.6. ***Routine maintenance*** requirements of equipment are identified and implemented in accordance with workplace and quality assurance procedures. 1.7. Temporary or permanent application of materials is determined from job requirements.
2. Work with materials and equipment.	2.1. LED ***materials*** are selected according to job specifications. 2.2. Correct type of routing tools and equipment to be used is selected ***according*** to job specifications. 2.3. Cutter types and their ***applications*** are identified for the specified job. 2.4. Appropriate routing systems are used to rout LED installation.
3. Install LED system.	3.1. LED system is installed according to manufacturer specifications. 3.2. LED bulbs and wiring is placed into correct position. 3.3. Wires are marked ***ready*** for connection to power source in consideration of ***characteristics of electric*** supply.
4. Clean up.	4.1. Work area is cleaned and ***waste*** materials removed in accordance with ***statutory and regulatory authority requirements***. 4.2. Tools and equipment, ***including*** personal protective equipment, are cleaned, maintained and stored.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to prepare surfaces using correct applicators and materials
- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - charts and hand drawings
    - electrical systems
    - job drawings
    - manufacturer specifications and instructions
    - organisational work specifications
    - requirements and instructions issued by authorised organisational or external personnel
  - report faults
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply calculations
- organisational skills, including the ability to plan and set out work
- problem solving skills to recognise, and take action to rectify, minor faults and problems
- teamwork skills to be able to coordinate with others, action tasks and relate to people from a range of social, cultural, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- material safety data sheets (MSDS)
- job safety analysis (JSA) and safe work method statements

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REQUIRED SKILLS AND KNOWLEDGE

- maintenance of routers and cutters
- relevant Australian and New Zealand standards, and:
  - manufacturer specifications
  - OHS requirements
  - other applicable codes or standard operating procedures relevant to the sector
- terminology and definitions used in LED
- theory of LED and routing:
  - routing materials and their uses
  - cutter types
  - LED systems
  - routing depths
  - routing software
  - types of routing systems
  - wiring.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency can be assessed in a real or simulated environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of understanding and applying: • characteristics and uses of routing materials and equipment in a range of signage jobs • LED bulbs and wiring used in signage • router set up and safe use • correct and safe maintenance of routers and cutters • correct techniques for connecting and sealing LED wiring.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to using laser/rotary router for LED system • support materials appropriate to activity • workplace instructions relating to using laser/rotary router for LED systems • material safety data sheets

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EVIDENCE GUIDE

- research resources, including industry-related systems information
- relevant software.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far

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EVIDENCE GUIDE

as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Quality assurance requirements include:

- attention to work specifications
- Australian and international standards relevant to the sign industry
- control of handling procedures
- internal company quality assurance policy and risk management strategies
- procedures for installing and finishing
- quality of materials
- use and maintenance of equipment
- workplace operations and procedures.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- hazard control
- hazardous materials and substances
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:

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RANGE STATEMENT

	• concealed services (water, power and gas) • conduct of operational risk assessment and treatments associated with lighting • restricted access barriers • traffic control • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of machines • use of tools and equipment • workplace environmental requirements and safety.
Job requirements include:	• and determination of work requirements and safety plans and policies • assessment of conditions and hazards • equipment defect identification • work site inspection.
Relevant Australian standards include:	• regulatory requirements • standard drawings and details • urban design manuals.
Tools and equipment include:	• electrical wire connectors • electrical wire cutters • laser routers • range of router cutting tools • rotary routers.
Routine maintenance includes:	• checking for damage or non-standard performance • cleaning.
Materials include:	• acrylic • laminated acrylic • medium density fibreboard (MDF).

Characteristics of electricity include:	• circuits:
	  • series
	  • parallel
	  • series-parallel
	• current
	• voltage

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RANGE STATEMENT

Statutory and regulatory authority requirements include:	• watts.
	• federal, state and local authorities administering applicable Acts, regulations and codes of practice and also can pertain to:
	  • removal of waste products
	  • storage of chemicals.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSI3014A Manufacture gas-charged glass-formed illuminated signage

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to manufacture gas-charged glass-formed illuminated signage.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills and knowledge to manufacture neon-type signs, and includes working with others and as a member of a team.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare work.	1.1. ***Quality assurance requirements*** of signage operations are recognised and adhered to. 1.2. ***Safety*** (***OHS***) requirements in accordance with application tasks and workplace operations are recognised and adhered to. 1.3. ***Job requirements*** are identified from drawings and specifications/instructions and/or ***client*** brief. 1.4. Specifications, drawings and instructions are interpreted and job requirements and sequence determined. 1.5. Layout is set out to scale using setting out techniques applicable to sign design. 1.6. Product range is assessed and selected in accordance with job requirements and ***relevant Australian standards***. 1.7. ***Tools***, ***equipment*** and materials are selected to carry out tasks consistent with job requirements. 1.8. Routine maintenance requirements of equipment are identified and implemented in accordance with workplace and quality assurance procedures. 1.9. Temporary or permanent application of materials is determined from job requirements.
2. Mark out design.	2.1. Direct and indirect layout methods are identified and applied. 2.2. Sections are calculated and marked out to design specifications. 2.3. Joint locations are determined from layout and marked out on pattern. 2.4. Electrodes are marked out to indicate double backed/right angled position.
3. Bend glass.	3.1. Glass is heated with care over a gas flame until pliable. 3.2. Glass is bent to form shape consistent with pattern and specifications.
4. Attach electrodes and connect glass to form sections.	4.1. Electrodes are attached in accordance with pattern specification and Australian standards requirements. 4.2. Glass tubing is connected using appropriate procedures and techniques.
5. Prepare glass for lighting system.	5.1. Pumping station is activated in accordance with job requirements and section is connected to pumping

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ELEMENT	PERFORMANCE CRITERIA
	station in accordance with job specifications. 5.2. Glass is vacuumed in accordance with job requirements and filled with ***gas*** pumped using equipment and materials consistent with job requirements. 5.3. Glass is sealed and bombarded using equipment consistent with job requirements and industry standards. 5.4. Glass is cooled safely and aged in accordance with job requirements. 5.5. Neon sections are tested to determine transformer loadings in accordance relevant Australian standards. 5.6. Doubled sections of glass are blackened to form design shape.
6. Install tube supports to board/panel.	6.1. Neon glass sign is securely attached to board/panel using tube supports. 6.2. Illuminated sign components are fixed to board/panel using appropriate ***attachments***.
7. Clean up finished sign.	7.1. Sign and surrounding surface environment/area are cleaned and waste materials removed in accordance with ***statutory and regulatory authority requirements***. 7.2. Tools and equipment, including personal protective equipment, are cleaned, maintained and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - determine requirements
  - effectively communicate verbally with others within a team environment

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REQUIRED SKILLS AND KNOWLEDGE

- enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
- follow instructions
- read and interpret:
  - job drawings
  - charts and hand drawings
  - manufacturer specifications and instructions
  - organisational work specifications
  - requirements and instructions issued by authorised organisational or external personnel
- report faults
- use and interpret non-verbal communication
- use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- organisational skills, including the ability to plan and set out work
- problem solving skills to recognise, and take action to rectify, minor faults and problems
- teamwork skills to be able to coordinate with others, action tasks and relate to people from a range of social, cultural, ethnic backgrounds and with varying physical and mental abilities
- work, shape and join glass-tubed sections safely.

Required knowledge

Required knowledge for this unit is:

- identification of dimensions, symbols, abbreviations and key features of signage
- interpretation of drawings and specifications
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- measurement and setting out related to layout of signs
- methods of pumping gas into glass
- shaping and forming glass techniques
- statutory and regulatory authority requirements, particularly those relating to:
  - removal of waste products
  - storage of chemicals and materials
- terminology and definitions used in signage
- types and characteristics of gas-charged glass-formed illuminated signs
- types and correct handling of materials and their characteristics relevant to construction of glass illuminated signs
- types and uses of electrodes and transformers

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REQUIRED SKILLS AND KNOWLEDGE

- relevant Australian and New Zealand standards:
  - Australian standards, including:
    - AS2508.2.012 Safe storage and handling; information cards for hazardous materials
    - AS3100 Approval and test specification - General requirements for electrical equipment
    - AS3953 Loading guide for dry-power transformers
  - manufacturer specifications
  - OHS requirements
  - other applicable codes or standard operating procedures relevant to the sector.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- understanding and applying principles of sign layout
- effective operational use of tools and equipment to handle and form glass to design shapes
- safe techniques to attach electrodes and connect glass tubing
- safe and controlled techniques to prepare glass and pump gas to glass assembly
- safe techniques to bombard, cool and age glass to specifications
- handling and securing procedures to affix sign to board or panel to complete job to requirement
- identification of typical faults in illuminated signage and appropriate remedial action taken to rectify problems.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the

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EVIDENCE GUIDE

mandatory task requirements

- relevant specifications and work instructions
- tools and equipment appropriate to manufacturing gas-charged glass-formed illuminated signage
- support materials appropriate to activity
- workplace instructions relating to manufacturing gas-charged glass-formed illuminated signage
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice,

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EVIDENCE GUIDE

with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Quality assurance requirements include:

- attention to work specifications
- Australian and international standards relevant to the sign industry
- control of handling procedures
- internal company quality assurance policy and risk management strategies
- procedures for installing and finishing
- quality of materials
- use and maintenance of equipment
- workplace operations and procedures.

Safety (***OHS***) is to be in accordance with state and territory

- emergency procedures, including extinguishing fires, organisational first aid

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RANGE STATEMENT

legislation and regulations and project safety plan and may include:	requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of machines
	• use of tools and equipment
	• workplace environmental requirements and safety.

Job requirements include:	• assessment of conditions and hazards • determination of work requirements • equipment defect identification • safety plans and policies • work site inspection.
Clients include:	• business owners • printers • property owners • sign manufacturers • statutory bodies.
Relevant Australian standards include:	• AS3100 Approval and test specification - General requirements for electrical equipment • AS3953 Loading guide for dry-power transformers • regulatory requirements • standard drawings and details • urban design manuals.
Tools and equipment include:	• glass heaters

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RANGE STATEMENT

	• tongs.
Gas includes:	• neon (plasma).
Attachments include:	• custom-made fixtures and brackets • fixings and fasteners.

Statutory and regulatory authority requirements include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice and also can pertain to:
	  • removal of waste products
	  • storage of chemicals.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSI3015A Produce airbrushed signage

Modification History

Version	Comments
1	This version first released with CPC08 Construction, Plumbing and Services Integrated Framework Training Package Version 8.

Unit Descriptor

This unit of competency specifies the outcomes required to prepare and apply materials to produce various forms of airbrushed work.

Application of the Unit

This unit of competency supports the achievement of skills and knowledge required to apply airbrush techniques to prepared surfaces.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare work.	1.1	Job requirements are identified from drawings, specifications, instructions and client briefs.
		1.2	Task sequence is planned according to ***organisational requirements***.
		1.3	Colour is selected according to job requirements.
		1.4	***Tools, equipment*** and ***materials*** are selected to carry out tasks consistent with job requirements.
		1.5	Substrates are identified and prepared according to planned airbrush application.
2	Set up and test airbrush equipment.	2.1	**Applications** of ***different types of airbrushes*** are considered and airbrush is selected for the job.
		2.2	***Components and accessories*** for the selected airbrush are identified, selected and set up according to manufacturer recommendations and specifications.
		2.3	Function and security of fittings are checked before use according to manufacturer recommendations.
3	Prepare and apply masks for use with airbrush.	3.1	Masks are identified according to planned airbrush application.
		3.2	Adhesive masks are prepared and applied according to job requirements.
		3.3	Hand-held templates are prepared and applied according to job requirements.

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4	Apply inks or paints using airbrush.	4.1	Airbrush inks or paints are applied to surface using application techniques consistent with job requirements.
		4.2	Light and shade effects are applied to create visual realism using technique suitable to the selected medium.
		4.3	Defects in application are identified and corrective action taken.
		4.4	***Airbrush work*** is finalised according to job specifications.
5	Clean up and store equipment.	5.1	Airbrush and associated components and accessories are dismantled, checked, cleaned and maintained according to manufacturer recommendations.
		5.2	Airbrush inks, paints and solvents are stored safely according to manufacturer specifications and organisational requirements.
		5.3	Work area is cleaned and waste materials are removed according to ***statutory and regulatory authority requirements***.
		5.4	Other tools and equipment, including personal protective equipment (PPE), are cleaned, maintained and stored.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- language and literacy skills to:
  - communicate clearly and directly using verbal, non-verbal and written communication
  - interpret job requirements and instructions, including:
    - client specifications
    - drawings
    - manufacturer instructions
    - material safety data sheets (MSDS)
  - report faults
  - use questioning to identify and confirm requirements
- numeracy skills to calculate scaled enlargements
- planning and organising skills to:
  - sequence tasks
  - set out work
- problem-solving skills to:
  - recognise minor faults and problems and take action to rectify them
  - respond to workplace challenges and put ideas into action
  - select appropriate tools and equipment
- self-management skills to:
  - comply with work site environmental and sustainability frameworks or management systems
  - contribute to achievement of team goals
  - identify and follow organisational procedures
  - respond to change
- technical skills to:
  - identify defects associated with airbrush application and take corrective action
  - maintain, clean, dismantle and reassemble airbrush, components and accessories
  - prepare and apply a variety of masks to use in conjunction with airbrush techniques
  - apply airbrush techniques
  - select, set up and check airbrush equipment and accessories prior to use

Required knowledge

- airbrush application principles, sequencing and techniques

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- airbrushing terminology and definitions
- Australian and New Zealand standards applicable to airbrushing signage work
- materials relevant to airbrush work, including:
  - inks
  - paints
  - masks
  - masking materials
- statutory and regulatory authority requirements relevant to airbrushing signage work, including those relating to removal of waste products
- types of airbrushes, components and accessories used in airbrushed signage work
- work health and safety (WHS) requirements and safe work methods applicable to airbrushing

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- comply with site safety and OHS legislation, regulations and codes of practice applicable to workplace operations
- interpret specifications for the preparation and application of various airbrush techniques
- apply airbrush using a variety of freehand and masked techniques
- use airbrushing tools, plant and equipment to produce airbrushed signage work that complies with organisational quality standards and client requirements.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to apply lines and scrolls
- support materials appropriate to activity
- workplace instructions relating to applying lines and scrolls
- MSDS
- research resources, including industry-related systems information.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using one or more of the following methods:

- written and/or oral assessment of required knowledge
- observed, documented and/or first-hand testimonial evidence

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of the candidate producing airbrushed signage work using a variety of techniques.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Organisational requirements include:

- quality assurance requirements:
  - applying Australian and international standards relevant to the sign industry, such as AS1319 Safety signs for the occupational environment
  - applying internal company quality assurance policy and risk-management strategies
  - determining and adhering to work specifications
  - checking quality of materials
  - correctly using and maintaining equipment
  - identifying equipment defects
- WHS is to be in line with state and territory legislation and regulations and project safety plan, and may include:
  - assessment of conditions and hazards
  - emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation
  - hazard control, including hazardous materials and substances
  - PPE prescribed under legislation, regulations and workplace policies and practices
  - safe operating procedures, including the conduct of

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operational risk assessment and treatments associated with:
- concealed services (water, power and gas) and lighting
- restricted access barriers
- work site visitors and the public
- working in proximity to others
- use of MSDS
- use of tools and equipment
- workplace environmental requirements.

Tools and equipment may include:
- airbrush inks
- air brush, and components and accessories
- buckets
- compressed air and leads
- measuring tapes and rules
- stencil knives
- straight edges.

Materials may include:
- airbrush inks
- mask and template mediums, such as:
  - acetate film
  - cardboard
  - frisk film
  - mask vinyl
  - masking tape
- paints, including:
  - oil-based
  - water-based.

Different types of airbrushes may include:
- single action
- double action
- internal mix
- external mix.

Components and accessories may include:
- air hose
- paint pot attachment.

Airbrush work may include:
- freehand techniques
- geometric shapes

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- graphics
- lettering
- signage.

Statutory and regulatory authority requirements include:

- federal, state and local authorities administering Acts, regulations and codes of practice applicable to:
  - airbrush signage work
  - removal of waste products
  - storage of chemicals.

Unit Sector(s)

Competency field Signage

Unit sector Construction

Custom Content Section

Not applicable.

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CPCCSI3016A Produce digital signage using advanced software applications

Modification History

Version	Comments
1	This version first released with CPC08 Construction, Plumbing and Services Integrated Framework Training Package Version 8.

Unit Descriptor

This unit of competency specifies the outcomes required to select and use a variety of advanced software applications to design and produce digital signage.

Application of the Unit

This unit of competency supports workers in the digital signage and printing sector who lay out, design and produce signs using multiple advanced software applications.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Interpret client brief and job specifications.	1.1	Details of client design brief and job specifications are interpreted and clarified with client or supervisor.
		1.2	***Type of signage application*** is determined and production requirements are assessed.
		1.3	Appropriate ***software application*** is selected to produce the work as required.
2	Arrange graphic framework on page.	2.1	Client copy and images are assembled to conform to the design brief.
		2.2	***Elements*** are created and arranged on page to ensure artwork meets job specifications and with precise alignment or visual balance.
		2.3	Elements are arranged in layers to allow for effective selection and re-arrangement.
		2.4	Text is formatted and flowed into document using most ***productive technique***.
		2.5	Text or data is imported from other applications, correctly formatted and any cross-application formatting issues are resolved.
		2.6	Graphics and other elements are imported from other applications and are arranged according to the design brief.

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3	Produce vector objects.	3.1	***Tools* and *software functionalities*** are used to produce objects and required attributes are entered and shapes manipulated, continuing until graphic framework is finalised.
		3.2	Lines and curves are adjusted and edited to fit design specifications.
		3.3	Objects are painted and transposed and strokes and effects are scaled according to the design brief.
		3.4	Colour and appearance attributes are selected and copied as required.
		3.5	Gradients, fills and patterns are used to paint and blend as required by the layout and design brief.
4	Edit raster images.	4.1	Images are retouched to conform to job specifications.
		4.2	Colour and tone corrections are employed to conform to job specifications.
		4.3	Appropriate ***contouring technique*** is applied to produce the best result, depending on the image.
		4.4	Software functionalities are used to mask objects where required.
		4.5	Edited image is saved in ***appropriate format*** to allow for import into other applications and to conform to job specifications.
		4.6	Image storage requirements are identified and employed.
5	Produce print-ready file.	5.1	File is checked for errors according to client brief and job specifications.
		5.2	Correct colour profiles are applied to accurately reproduce colours.
		5.3	Sufficient image resolution is applied according to output specifications.
		5.4	Bleeds, printer marks and contour cuts are applied.

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5.5 Completed file is sent to be ripped according to enterprise procedures.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- language and literacy skills to:
  - express ideas and information
  - gain client agreement on design layout
  - interpret client brief and specifications
- numeracy skills to determine image resolution
- planning and organising skills to:
  - collect and organise the storage and retrieval of electronic files
  - produce proofs according to timeframe specified in client requirements
- problem-solving skills to:
  - analyse content of imported electronic files and determine formatting requirements
  - check and fix errors in the image produced
- self-management skills to:
  - apply work health and safety (WHS) requirements, including correct ergonomics when operating a computer
  - contribute to the maintenance of the production process as a member of a team
- technical skills to:
  - operate relevant hardware and software to produce a layout
  - select colour libraries within software applications

Required knowledge

- image storage options, including:
  - use of lossless file compression formats to preserve files
  - use of lossy file compression formats to share files
- printing processes used in digital production
- reasons for:
  - considering printing process during design phase, including potential problems resulting from lack of consideration
  - editing or manipulating images
  - creating a colour profile when preparing an image for printing
- types of software applications suitable for producing digital signage and the functionalities of each type of software, including:
  - colour modes, profiles and rendering intents and the advantage and disadvantages of

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each

- methods for:
  - flowing text throughout a document
  - adjusting guides and rulers
- qualities of different file formats and advantages and disadvantages for specific types of work, including types of file format that are unsuitable for print-based jobs
- techniques for styling text productively

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- find and use information relevant to tasks from a variety of information sources
- use at least two software applications to prepare two different sets of layouts according to enterprise standards.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment include access to relevant facilities, equipment and materials used for digital production, such as:

- high-end computers
- layout software
- output devices.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using one or more of the following methods:

- written and/or oral assessment
- observed, documented and/or first-hand testimonial evidence of the candidate selecting and using a variety of high-end software applications to efficiently produce a standard job.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical,

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take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Type of signage application* may be:**

- banners
- illuminated signs
- promotional display signs
- vehicle graphics.

Software applications may include:

- Adobe InDesign
- Adobe Illustrator
- Adobe Photoshop
- Corel Draw
- Corel PHOTO-PAINT
- new software applications
- new versions of existing software applications.

Elements may include:

- complex shapes
- graphics
- text.

Productive techniques may include:

- character style
- eyedropper tool
- linking of text frames
- paragraph style.

Tools may include:

- direct selection
- pen
- shape.

Software functionalities

- cutout

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may include:
- mask
- trace
- vectorise.

Contouring techniques may include:
- layer masks
- paths
- quick mask or lasso tool.

Appropriate format may include:
- file types that support transparency or paths, vector and raster images, such as:
  - portable document format (PDF)
  - tagged image file format (TIFF)
  - encapsulated postscript (EPS).

Unit Sector(s)

Competency field Signage

Unit sector Construction

Custom Content Section

Not applicable.

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CPCCSP2001A Handle solid plastering materials

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to handle, sort and store solid plastering materials.

It includes identifying a range of commonly used materials; planning and preparing for work; safe and effective handling; sorting and storage of materials, including both during installation and removal; and cleaning and maintenance of the work area.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to handle and store a range of materials used for plastering work, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied to the ***scope of work*** performed. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2. Handle, sort and store solid plaster material and components.	2.1. Solid plastering material and components are identified on delivery to site and checked for conformity to material schedule, plans and ***quality requirements***. 2.2. Handling characteristics of solid plastering material and components are identified and safe handling techniques are selected and applied in accordance with workplace requirements. 2.3. Solid plastering material and components are sorted to suit material type and size, stacked for ease of identification, retrieval for task sequence, and job location in accordance with work specifications. 2.4. Solid plastering material and components are protected against physical and water damage and are stored clear of traffic ways. 2.5. Signage and barricades are erected to isolate stored materials from workplace traffic or unauthorised access.
3. Handle and position solid plastering material and components in preparation for installation.	3.1. Solid plastering material and components are identified from stack and safely handled and distributed to required job location. 3.2. Solid plastering materials and components are positioned ready for fixing in accordance with manufacturer recommendations and job requirements.
4. Handle and remove	4.1. Materials are handled safely and effectively according

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ELEMENT	PERFORMANCE CRITERIA
solid plastering material and components on completion.	to material safety data sheets (MSDS) and requirements of regulatory authorities. 4.2. Hazardous material is identified for separate handling by authorised personnel. 4.3. Dust suppression procedures are used to minimise health risk to self and others. 4.4. Protection of materials is provided in accordance with specific material needs. 4.5. Materials are stored safely and effectively according to MSDS and requirements of regulatory authorities.
5. Clean up.	5.1. Unused materials are sealed and stored/stacked in accordance with standard material handling practices and techniques and company requirements. 5.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices. 5.3. Stormwater system is protected during clean-up process in accordance with sound work practices compliant with Environment Protection Authority (EPA) requirements. 5.4. Waste and unwanted materials are removed and placed into job waste bins or rubbish stockpile in a safe and effective manner in accordance with sound work practices compliant with EPA requirements.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources

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REQUIRED SKILLS AND KNOWLEDGE

    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- job safety analysis (JSA) and safe work method statements
- materials storage and environmentally friendly waste management
- MSDS
- plans, drawings and specifications
- plastering terminology
- plastering tools and equipment types, characteristics, uses and limitations
- processes for the calculation of material requirements
- quality requirements
- systems and techniques for safe handling of materials
- types, characteristics, uses and limitations of solid plastering materials and components
- workplace and equipment safety requirements including common manual handling injuries and handling techniques.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply of relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools and equipment
- communicate and work effectively and safely with others
- handle and store the mandatory solid plastering materials and components listed in the range statement
- dispose of waste and excess materials.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements

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EVIDENCE GUIDE

- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete

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EVIDENCE GUIDE

confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to handling and storage of solid plastering materials and components
- relevant Australian standards
- safe work procedures relating to solid plastering materials
- signage

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RANGE STATEMENT

	• verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Scope of work:	• solid plastering materials and components include corner beads, casing beads, render and setting coats mix composition (including additives like plasticisers, colour and waterproofing agents), timber or metal lathing, fasteners, sand, lime, lime putty, plaster compounds and finish coats • protection of stacked/stored materials from moisture or damage includes isolation/separation, covering, tying or banding, barricades, signs and locking away (hazardous materials) • waste material and debris include banding straps, packing pieces, broken or damaged goods, cardboard, plastic, paper and excess plaster and render material • dust suppression procedures include spraying with water, covering or using a vacuum cleaner.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • lighting
	  • manual handling
	  • surrounding structures
	  • traffic control
	  • trip hazards

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RANGE STATEMENT

	• working at heights • work site visitors and the public • working in confined spaces • working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• mortar boards and stands • shovels • sieves • straight edges • wheelbarrows.
Environmental requirements include:	• clean-up management • dust and noise • stormwater protection • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Co-requisite units Nil

Functional area

Functional area

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CPCCSP2002A Use solid plastering tools and equipment

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to use solid plastering tools, plant and equipment.

It includes the identification, selection and safe use of a range of commonly used solid plastering tools, plant and equipment and the storage and user maintenance of these.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to safely and effectively use a range of solid plastering tools, plant and equipment, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied to the range of ***plant***, ***tools and equipment*** used.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented. in accordance with ***quality requirements***.
	1.4. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.5. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2. Identify hand and power tools.	2.1. Hand and power tools and their functions, operations and limitations are identified.
	2.2. OHS requirements for using hand tools are recognised and adhered to.
	2.3. OHS requirements for using power tools are recognised and adhered to.
3. Select tools for project.	3.1. Tools are selected consistent with job requirements.
	3.2. Tools, including leads and hoses, are checked for tags, serviceability and safety, and any faults are rectified or reported.
	3.3. Power tools guards, retaining bolts, couplings, gauges and controls are checked and maintained in accordance with manufacturer recommendations.
	3.4. Equipment to hold or support material during operation is selected.
	3.5. Pre-operational checks, including lubricants, hydraulic fluid and water, are completed according to manufacturer recommendations.
4. Use tools.	4.1. Power and compressed air supply are connected to work area.
	4.2. Start-up and shut-down procedures are followed.
	4.3. Tools are safely and effectively used according to manufacturer recommendations and OHS

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ELEMENT	PERFORMANCE CRITERIA
	requirements. 4.4. Tools are safely located when not in immediate use.
5. Select plant and equipment.	5.1. Function and limitations of plant and equipment used in solid plastering are identified. 5.2. Plant and equipment are selected consistent with hazard minimisation and needs of job. 5.3. Method of operation of plant and equipment is identified. 5.4. OHS requirements for operating and using plant and equipment are recognised and adhered to. 5.5. Plant and equipment are checked for safety, and faults are rectified or reported.
6. Use plant and equipment.	6.1. Plant and equipment are safely and effectively used. 6.2. Plant and equipment are safely located when not in immediate use. 6.3. Plant and equipment are cleaned, maintained and stored after use.
7. Clean up.	7.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 7.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources

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REQUIRED SKILLS AND KNOWLEDGE

    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions

Required knowledge

Required knowledge for this unit is:

- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- quality requirements
- systems and techniques for safe handling of materials
- types, characteristics, uses and limitations of:
  - solid plastering hand tools
  - solid plastering materials
  - solid plastering power tools
  - solid plastering plant items
- wall and ceiling industry terminology
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply of relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • communicate and work effectively and safely with others • select, use and maintain the tools and equipment listed in the range statement • select, use and perform operator maintenance of the plant listed in the range statement.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying

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EVIDENCE GUIDE

	safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

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EVIDENCE GUIDE

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to the use of solid plastering tools and equipment
- relevant Australian standards
- safe work procedures relating to solid plastering tools and equipment
- signage
- verbal, written and graphical instructions
- work bulletins

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RANGE STATEMENT

	• work schedules, plans and specifications.

Plant, tools and equipment:	• general tools include:
	  • brushes
	  • hammers
	  • measuring tapes and rules
	  • scaffolding and work platforms
	  • screed boards
	  • trowels
	• power tools include:
	  • power grinders
	  • power mixers
	  • power saws
	• plant includes:
	  • earth leakage protection
	  • lighting sets and power routers
	  • power actuated fasteners
	  • small compressors, air operated
	  • small petrol or diesel engine driven generators
	• levelling devices include:
	  • line level
	  • spirit level
	  • straight edge
	  • string line
	  • water level and laser
	• hand tool processes include:
	  • boring and shaping of material
	  • cutting
	  • marking and levelling
	  • material shifting and holding
	  • placing and finishing concrete and mortar products
	  • planing
	  • setting out.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation • handling activities that may require the assistance of others or the use of manual or

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RANGE STATEMENT

include:	mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • lighting
	  • power equipment
	  • power leads and sources
	  • trip hazards
	  • work site visitors and the public
	  • working in confined spaces
	  • working in proximity to others
	  • working with cutting edges
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials include:	• casing beads • corner beads • fasteners • finish coats • lime • lime putty • plaster compounds • render and setting coats mix composition, including additives such as plasticisers, colour and waterproofing agents • sand • timber or metal lathing.
Environmental requirements	• clean-up management

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RANGE STATEMENT

include:	• dust and noise • stormwater protection • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSP2003A Prepare surfaces for plastering

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to prepare surfaces to accept a new skin of lining materials.

It includes planning and preparation for work, producing a level and plumb surface through sanding and grinding, patching, levelling, packing, filling and finishing, and post work clean-up.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to prepare a range of construction surfaces for solid plastering application, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied to the ***scope of work*** performed. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. ***Materials*** quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2. Prepare surface.	2.1. Preparation requirements are identified from site inspection, plans and specifications. 2.2. Hazards, obstructions and attachments are removed, or arrangements made for their removal. 2.3. Surface preparation tools are selected and set up in accordance with surface condition and job requirements. 2.4. Tools are used to prepare surface in accordance with manufacturer specifications and job requirements. 2.5. Loose or protruding material is removed by sander or grinder and brush so that surface is prepared to specification.
3. Patch and fill holes and depressions.	3.1. Patching method of hole is determined from type of material surface, size of hole, compatibility of materials and planned finish. 3.2. Patching materials are selected to suit material surface and are mixed to manufacturer specifications. 3.3. Material is applied to manufacturer specifications using appropriate application method.

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ELEMENT	PERFORMANCE CRITERIA
	3.4. Surface is brushed, washed and scraped clean of surplus material in accordance with type of patching material and material surface.
	3.5. Patched areas are sealed by application of prime or sealing coat, to suit requirements of specified finishes.
4. Clean up.	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	4.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:

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REQUIRED SKILLS AND KNOWLEDGE

- use a range of mobile technology, such as two-way radio and mobile phones
- voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- plastering and wall and ceiling terminology
- processes for the calculation of material requirements
- quality requirements
- surface preparation techniques, including sanding, planing, levelling, packing, patching and filling
- surface preparation tools and equipment types, characteristics, uses and limitations
- types, uses and limitations of surface preparation materials
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply of relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools and equipment
- communicate and work effectively and safely with others
- prepare surfaces for plastering for either solid plastering (masonry or concrete) or sheet plastering (timber, steel or masonry) including:
  - both wall and ceiling surfaces to a level and plumb surface finish
  - patching or filling holes and depressions.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the

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EVIDENCE GUIDE

	mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the

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EVIDENCE GUIDE

point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to the preparation of surfaces for plastering
- relevant Australian standards
- safe work procedures relating to the preparation of surfaces for plastering

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RANGE STATEMENT

	• signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Scope of work:	• surface preparations include preparation for solid plastering and sheet plastering or lining material, and may include pre-cast cladding • surfaces may include timber, plasterboard and plasterglass, masonry, brick, metal (ferrous and non-ferrous), concrete and solid plaster.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • lighting
	  • power equipment
	  • power leads and sources
	  • trip hazards
	  • work site visitors and the public
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment:	• include:
	  • brooms
	  • brushes
	  • buckets

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RANGE STATEMENT

	• chisels • filling blades • hammers • power grinders • power sanders • sanding blocks • scrapers • shovels • sponges • trowels • may include: • elevated work platforms • hoses • ladders • planks • trestles • water sprayers.
Materials include:	• caulking compounds • cellulose and plaster • lime putty • plaster • proprietary fillers • sand and cement • sheet material.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • stormwater protection • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.

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Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSP3001A Apply float and render to straight and curved surfaces

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to float, render and finish flat and curved solid plastering work.

It includes planning and preparation for the work, preparation of templates, preparation of the background surface, application of floating and rendering to flat and curved surfaces and to piers, finishing of the rendering coats, and post work clean-up activities.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to apply floated or rendered materials to a range of straight and curved construction surfaces, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied to the ***scope of work*** performed. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. ***Materials*** quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2. Prepare templates for curved work or circular columns.	2.1. Material is selected to manufacturer templates. 2.2. Radiuses and shapes are established for curves and columns according to plans and specifications. 2.3. Templates are manufactured and formed to suit job requirements.
3. Prepare background surface.	3.1. Background surface is identified and wire-brushed if required. 3.2. Dash coat is mixed and applied liberally to wetted surface. 3.3. Bonding coats using patent products are applied to specifications. 3.4. Metal beads are selected for external or squint arises. 3.5. Metal beads are fixed to arises and checked for accuracy.
4. Apply floating and rendering to flat and curved surfaces.	4.1. Screeding lines or guides are established to specified tolerances. 4.2. Float is used and applied to Australian standards and plans and specifications.

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ELEMENT	PERFORMANCE CRITERIA
	4.3. Floating coat is applied and ruled off to screed. 4.4. Surface is finished, plumbed and levelled to specified alignment tolerance. 4.5. Heads, reveals and sills are finished square off to wall ace and back into opening. 4.6. Internal angles, ceiling and floor lines are accurately cut.
5. Apply floating and rendering coats to piers.	5.1. Floating coat is applied using floating profiles and rules, and Dutch pins or hooks so that face of pier is plumb and ruled off. 5.2. Face is squared off to form returns and reveals, rules are removed and arises are left square or radiussed as required.
6. Apply floating coat within metal beading.	6.1. Metal beading is fixed to base surface to form a panel with expansion joint so that panel is plumb and square to specified position. 6.2. Panels are finished to true, flat surfaces, suitable for applying plaster and lime setting.
7. Finish rendering coats on flat walls, piers and curved work.	7.1. Walls are hand floated to fill slacks and voids. 7.2. Walls are scoured and fined using water and hand float systems.
8. Clean up.	8.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 8.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:

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REQUIRED SKILLS AND KNOWLEDGE

- determine requirements
- follow instructions
- read and interpret:
  - documentation from a variety of sources
  - drawings and specifications
- report faults
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication, such as hand signals

- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- flat and curved surface plastering floating, rendering and finishing techniques
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- plastering tools and equipment types, characteristics, uses and limitations
- processes for the calculation of material requirements
- quality requirements
- solid plastering terminology
- systems and techniques for safe handling of materials
- types, characteristics, uses and limitations of solid plastering materials and components
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to:
	• locate, interpret and apply of relevant information, standards and specifications
	• comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
	• comply with organisational policies and procedures, including quality requirements
	• safely and effectively use tools and equipment
	• communicate and work effectively and safely with others
	• floating, rendering and finishing to specification a minimum of three surfaces, including:
	  • a curved wall
	  • a ceiling
	  • a column.

Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement

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EVIDENCE GUIDE

- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice,

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EVIDENCE GUIDE

with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to the application of float and render
- relevant Australian standards
- safe work procedures relating to the application of float and render

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RANGE STATEMENT

	• signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Scope of work:	• floating, rendering and finishing include horizontal, vertical and curved surfaces, including walls, reveals, sills, piers and columns • templates include those for curved work and circular columns • background surfaces include concrete, concrete blockwork, brickwork, stonework, and timber or metal lathing • cleaning and preparation of background surfaces include wire brushing, grinding, washing down, chipping and blast cleaning • wash coating may be applied using trowel, brush or nozzle spray • bond coating may be applied using nozzle spray, roller or brush.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • lighting
	  • power equipment
	  • power leads and sources
	  • trip hazards
	  • work site visitors and the public
	  • working in confined spaces

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RANGE STATEMENT

	• working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment:	• include: • measuring tapes and rules • spirit levels • squares • trowels • floats • brushes • screed boards • straight edges • mortar boards and stands • shovels • wheelbarrows • hawks • joint rules • small tools • plumb bobs and mason's squares • buckets • sieves • power leads • hammers • tin snips • may include: • grinders • wood saws • metal files • concrete mixers and scaffolding.
Materials:	• solid plastering materials and components include: • casing beads • corner beads • lime • lime putty • plaster compounds and finish coats

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RANGE STATEMENT

	• render and setting coats mix composition, including additives such as plasticisers, colour and waterproofing agents • sand • other materials may include: • flat marine ply • flat sheet plain galvanised iron (PGI) • nails • timber.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • stormwater protection • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCSP3002A Apply set coats

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to mix and apply plaster setting to flat and curved solid plaster backgrounds.

It includes planning and preparation for the work, preparation of the backgrounds, mixing of the setting, application and finishing of the set, and completion of clean-up activities.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to apply plaster to flat and curved construction surfaces, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied to the ***scope of work*** performed.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement.
	1.5. ***Materials*** quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
	1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2. Prepare backgrounds for set coat application.	2.1. Background surface is identified and surface preparation process is selected in accordance with requirements of the setting coat to be applied.
	2.2. Surface is cleaned in preparation for application.
	2.3. Surface is wet down to provide an even suction appropriate to the setting rate for the setting coat being applied.
	2.4. Surface is checked for appropriate level of suction appropriate to the setting rate of the setting coat being applied.
3. Mix plaster and lime setting.	3.1. Mix ratios of plaster and lime are selected for appropriate backgrounds, or to architect's specifications.
	3.2. Products are mixed to standard requirements and manufacturer specifications.
4. Apply plaster and lime set coat.	4.1. Application of set coats are in accordance with relevant standards and architect's requirements.
	4.2. Surface is trowelled until a hard, smooth finish is achieved to specified tolerances or levels of finish.
5. Clean up.	5.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	5.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- plastering tools and equipment types, characteristics, uses and limitations
- processes for the calculation of material requirements
- quality requirements
- set coat mixing and application techniques
- solid plastering terminology

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REQUIRED SKILLS AND KNOWLEDGE

- systems and techniques for safe handling of materials
- types, characteristics, uses and limitations of solid plastering materials and components
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply of relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools and equipment
- communicate and work effectively and safely with others
- apply set coats to specification on a minimum of three surfaces, which include:
  - one vertical
  - one horizontal
  - one curved.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the

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EVIDENCE GUIDE

	mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at

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EVIDENCE GUIDE

the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to the application of set coats
- relevant Australian standards
- safe work procedures relating to the application of set coats
- signage

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RANGE STATEMENT

	• verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Scope of work:	• application of set coats covers horizontal, vertical, and flat and curved surfaces, including walls, heads, arises, soffits, reveals and radiussed angles • set mix is to be in accordance with relevant Australian standard • setting coats may incorporate synthetic proprietary products • background surfaces include cement, sand plastered walls; cement, lime, sand plastered walls; sand, plaster and lime walls; and smooth concrete surfaces • cleaning of background surfaces includes wire brushing, grinding, washing down, scraping, wetting, chipping and blast cleaning.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • lighting
	  • power equipment
	  • power leads and sources
	  • trip hazards
	  • work site visitors and the public
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment

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RANGE STATEMENT

	• use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• brushes • concrete mixers • floats • grinders • hawks • joint rules • measuring tapes and rules • mortar boards and stands • plumb bobs and mason's squares • scaffolding • screed boards • shovels • small tools • spirit levels • squares • straight edges • trowels • wheelbarrows.
Materials include:	• casing beads • corner beads • lime • lime putty • plaster compounds and finish coats • render and setting coats mix composition, including additives such as plasticisers, colour and waterproofing agents • sand.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • stormwater protection • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering the applicable Acts, regulations

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RANGE STATEMENT

and codes of practice.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSP3003A Apply trowelled texture coat finishes

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to mix and apply trowelled texture coat finishes.

It includes planning and preparation for the work; preparation of the background surface; mixing, application and finishing of the texture coats; and completion of clean-up activities.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to apply textured finishes by trowelling to a range of suitable construction surfaces, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied to the ***scope of work*** performed. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. ***Materials*** quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2. Prepare surface area.	2.1. Materials and substrate surfaces are prepared for the specified trowelled texture coat finish in accordance with manufacturer recommendations. 2.2. Dash coat is mixed and applied liberally to wetted surface in accordance with manufacturer recommendations and specifications.
3. Mix and apply materials.	3.1. Texture coating materials are mixed to designed proportion and consistency in accordance with manufacturer recommendations and job specifications. 3.2. Texture coat is applied with trowel to specified surfaces and correct thickness. 3.3. Texture coat is applied in accordance with manufacturer recommendations and job specifications.
4. Finish and cure the texture coat.	4.1. Texture coat is surface finished plumb and level in accordance with manufacturer recommendations and job specifications. 4.2. Finished texture coat surface is cured in accordance

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ELEMENT	PERFORMANCE CRITERIA
	with manufacturer recommendations and job specifications.
5. Clean up.	5.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	5.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

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REQUIRED SKILLS AND KNOWLEDGE

Required knowledge for this unit is:

- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- plastering tools and equipment types, characteristics, uses and limitations
- processes for the calculation of material requirements
- quality requirements
- solid plastering terminology
- systems and techniques for safe handling of materials
- trowelled texture coat finish application techniques
- types, characteristics, uses and limitations of solid plastering materials and components
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply of relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools and equipment • communicate and work effectively and safely with others • prepare for and apply to specification a minimum of two different types of texture coat finishes.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying

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EVIDENCE GUIDE

	safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

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EVIDENCE GUIDE

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

1.1. ***Information*** includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to the application of trowelled texture coat finishes
- relevant Australian standards
- safe work procedures relating to the application of trowelled texture coat finishes
- signage
- verbal, written and graphical instructions
- work bulletins

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RANGE STATEMENT

	• work schedules, plans and specifications.
1.2. ***Scope of work***:	• application of trowelled texture coat finishes includes application to horizontal or vertical surfaces to a maximum thickness of 8mm • trowelled texture coat finishes includes high build (acrylic or styrene/acrylate) coatings, proprietary products or lines of finish, and cement render • surfaces used for application of trowelled texture coat finishes include concrete, concrete blockwork, brickwork, stonework, timber or metal lathing, off-form concrete, fibre cement sheeting and tilt-up concrete slabs, and other brick and masonry surfaces • cleaning of surfaces includes wire brushing, grinding, shipping and washing down • dash coat may be applied using trowel, brush or nozzle spray.

1.3. ***Safety*** (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • lighting
	  • power equipment
	  • power leads and sources
	  • trip hazards
	  • work site visitors and the public
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment

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RANGE STATEMENT

	• use of tools and equipment • workplace environmental requirements and safety.
1.4. ***Tools and equipment*** include:	• brushes • concrete mixers • floats • grinders • hawks • joint rules • mason's squares • measuring tapes and rules • mortar boards and stands • plumb bobs • scaffolding • screed boards • shovels • small tools • spirit levels • squares • straight edges • trowels • wheelbarrows.
1.5. ***Materials*** include:	• acrylic or styrene/acrylate coatings • cement render • proprietary texture coat finish products.
1.6. ***Quality requirements*** include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
1.7. ***Environmental requirements*** include:	• clean-up management • dust and noise • stormwater protection • waste management.
1.8. ***Statutory and regulatory authorities*** include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.

Unit Sector(s)

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Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSP3004A Restore and renovate solid plasterwork

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to repair damage in lime mortar cement render and solid plastered surfaces.

It includes planning and preparation for the work, selection of the repair processes and techniques, restoration of plasterwork, renovation of lettering and completion of post work clean-up activities.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to repair and restore cement rendered and solid plastered construction surfaces, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied to the ***scope of work*** performed.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement.
	1.5. Run off devices are installed and maintenance processes applied if appropriate to the task.
	1.6. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2. Select restoration or renovation method.	2.1. Extent and type of restoration or renovation required are identified by site examination and from plans and specifications.
	2.2. Drawing and template of damaged area are prepared to profile/moulding shape of existing work.
3. Restore plasterwork.	3.1. ***Materials*** are mixed and prepared for use according to ***quality requirements***.
	3.2. Damaged plasterwork is restored to original condition or specifications in accordance with plans and specifications.
	3.3. Damaged cement or plaster mould work is restored to original condition in accordance with plans and specifications.
	3.4. Textured finishes are applied to match original surfaces, details and alignment.
4. Renovate lettering and monograms.	4.1. Surface for renovation is prepared to architect's specifications.
	4.2. Monograms and lettering panels are constructed in sand and cement mortar to match detail for restorations.
	4.3. Materials are applied to fine finish, with sharp arises, square returns and plumb/level according to requirements or job drawings.
5. Clean up.	5.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	5.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and

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ELEMENT	PERFORMANCE CRITERIA
	standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- plastering tools and equipment types, characteristics, uses and limitations
- processes for the calculation of material requirements

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REQUIRED SKILLS AND KNOWLEDGE

- quality requirements
- solid plastering terminology
- solid plastering, restoration and renovation techniques
- systems and techniques for safe handling of materials
- types, characteristics, uses and limitations of solid plastering materials and components
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to:
	• locate, interpret and apply of relevant information, standards and specifications
	• comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
	• comply with organisational policies and procedures, including quality requirements
	• safely and effectively use tools and equipment
	• communicate and work effectively and safely with others
	• restore solid plasterwork to specification on a minimum of three tasks, including:
	  • one curved surface
	  • one ceiling
	  • one archway or column
	• renovate lettering to specification where the task requires the preparation and use of significant moulds.

Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements.

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EVIDENCE GUIDE

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances

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EVIDENCE GUIDE

assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

1.1. ***Information*** includes:
- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to the restoration and renovation of solid plasterwork
- relevant Australian standards

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RANGE STATEMENT

	• safe work procedures relating to the restoration and renovation of solid plasterwork • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
1.2. ***Scope of work***:	• restoration may be to lime mortar or cement render surface and includes straight or curved walls, straight or curved ceilings, chimneys and archways • renovation includes lettering and monograms.

1.3. ***Safety*** (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • lighting
	  • power equipment
	  • power leads and sources
	  • trip hazards
	  • work site visitors and the public
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

1.4. ***Tools and equipment***:	• include:
	  • brushes
	  • buckets

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RANGE STATEMENT

	• floats • grinders • hammers • hawks • joint rules • mason's squares • measuring tapes and rules • mortar boards and stands • plumb bobs • power leads • screed boards • shovels • sieves • small tools • spirit levels • squares • straight edges • tin snips • trowels • wheelbarrows • may include: • concrete mixers • metal files • scaffolding • wood saws.
1.5. ***Environmental requirements*** include:	• clean-up management • dust and noise • stormwater protection • waste management.
1.6. ***Statutory and regulatory authorities*** include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.
1.7. ***Materials*** include:	• casing beads • corner beads • finish coats • lime • lime putty • plaster compounds • render and setting coats mix composition,

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RANGE STATEMENT

	including additives such as plasticisers, colour and waterproofing agents • sand.
1.8. ***Quality requirements*** include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSP3005A Install pre-cast decorative mouldings

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to install pre-cast decorative mouldings to masonry, plasterboard and fibre cement sheets.

It includes planning and preparation for work; preparation of the work area; measuring, cutting and fixing of cast plaster; finishing junctions for painting; and completion of post work clean-up activities.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to install pre-cast decorative mouldings to a range of construction surfaces, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied to the ***scope of work*** performed. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. ***Materials*** quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2. Prepare work area for application processes.	2.1. Work area and substrate are prepared for installation of pre-cast mouldings according to plans and specifications. 2.2. Substrate is checked for conformance in accordance with the relevant Australian standard and appropriate ***fixing methods***.
3. Fix and stop pre-cast moulded archways.	3.1. Plasterboard wall sheets are confirmed to be in accordance with plans and specifications. 3.2. Archway profile is set out and cut to architect's drawings and specifications. 3.3. Timber arch soffit templates are cut and fixed to position. 3.4. Infill moulding is fixed to arch soffit and reveals of opening. 3.5. Arch is stopped in accordance with job specifications and required level of finish.
4. Fix and stop plaster panelled ceiling.	4.1. Ceiling battens are positioned and spaced for cornice margins and flush-mounted panels. 4.2. Panels are located on ceiling, and levelled, lined up

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ELEMENT	PERFORMANCE CRITERIA
	and fastened into position in accordance with approved specification.
	4.3. Jointing is finished to specification.
5. Fix ornamental mouldings.	5.1. Ornamental mouldings are measured and cut to specification.
	5.2. Ornamental mouldings are fixed by fastening or bonding with adhesive, straight and level to architect's specifications.
	5.3. Mouldings are finished, including straight stoppings and finishing mitres to specification.
6. Clean up.	6.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	6.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- mathematical and numeracy skills to apply measurements and calculations

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REQUIRED SKILLS AND KNOWLEDGE

- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- plastering and wall and ceiling terminology
- pre-cast decorative moulding installation tools and equipment types, characteristics, uses and limitations
- pre-cast decorative moulding measuring, cutting, placement, stopping and finishing techniques
- processes for the calculation of material requirements
- quality requirements
- type, characteristics, uses and limitation of pre-cast decorative moulding installation materials
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply of relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools and equipment • communicate and work effectively and safely with others • complete the installation and finishing of three different pre-cast decorative mouldings with at least one being installed on a ceiling.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying

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EVIDENCE GUIDE

safe work practices

- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

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EVIDENCE GUIDE

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

1.1. ***Information*** includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to the installation of pre-cast decorative mouldings
- relevant Australian standards
- safe work procedures relating to the installation of pre-cast decorative mouldings
- signage
- verbal, written and graphical instructions
- work bulletins

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RANGE STATEMENT

	• work schedules, plans and specifications.
1.2. ***Scope of work***:	• decorative mouldings are to include any three of panels, arches, corbels, belection moulds, roses and motifs • substrates include timber and steel framing, concrete walls and ceilings, masonry walls and plaster/board surfaces • material applications are to be in accordance with the relevant Australian standard (for plasterboard) and fibre cement to manufacturer instructions.

1.3. ***Safety*** (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • cutting tools
	  • lighting
	  • power equipment
	  • power leads and sources
	  • trip hazards
	  • work site visitors and the public
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

1.4. ***Tools and equipment***:	• include: • broad knives

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RANGE STATEMENT

	• curved trowels • electric screw guns • hammers • hand saws • joint rules • keyhole saws • measuring tapes and rules • mitre boxes • nail bags • paintbrushes and sponges • plasterer's trowels • power leads • sanding floats • small tools • spirit levels • squares • T-squares • may include: • cement mixers and power drills • internal angle finishing tools • trestles and scaffold planks.
1.5. ***Materials*** include:	• adhesives • corner beads • cornice cements and casting plaster • moulded panels.
1.6. ***Quality requirements*** include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
1.7. ***Environmental requirements*** include:	• clean-up management • dust and noise • stormwater protection • vibration • waste management.
1.8. ***Statutory and regulatory authorities*** include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.
1.9. ***Fixing methods*** include:	• adhesives • clouts

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RANGE STATEMENT

- nails
- screws
- threaded nails.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSP3006A Install cast plaster blockwork

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to install cast plaster blockwork by laying cast plaster blocks to construct a straight and plumb wall with other walls.

It includes planning and preparation for work, setting out and preparation of the base, laying of blockwork and completion of post work clean-up activities.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to install cast plaster blockwork to straight walls, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied to the ***scope of work*** performed.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement.
	1.5. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.6. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2. Set out and prepare base.	2.1. Blockwork is set out to position in accordance with plans, specifications and ***quality requirements***.
	2.2. Base is prepared so that the surface is dry, horizontal, clean and flat to specifications.
3. Lay plaster blockwork.	3.1. Plaster adhesive is prepared in accordance with quantity requirements and block manufacturer recommendations.
	3.2. Plaster blocks are laid to set out line, level and plumb in accordance with plans and specifications.
	3.3. Vertical abutments with other walls are made plumb and aligned to specification.
	3.4. Surplus adhesive is removed from joints to specification requirements.
4. Clean up.	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	4.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - follow instructions
  - notify completion of work
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- cast plaster blockwork installation materials and techniques
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- plasterwork and wall and ceiling terminology
- processes for the calculation of material requirements
- quality requirements
- types, characteristics, uses and limitations of cast plaster blockwork tools and

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REQUIRED SKILLS AND KNOWLEDGE

equipment

- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply of relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools and equipment • communicate and work effectively and safely with others • install a pre-cast gypsum plaster blockwork wall that meets specifications and is plumb with other walls.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying

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EVIDENCE GUIDE

	safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

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EVIDENCE GUIDE

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

1.1. ***Information*** includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to the installation of cast plaster blockwork
- relevant Australian standards
- safe work procedures relating to the installation of cast plaster blockwork
- signage
- verbal, written and graphical instructions
- work bulletins

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RANGE STATEMENT

	• work schedules, plans and specifications.
1.2. ***Scope of work*** includes:	• installation of all pre-cast gypsum plaster blockwork, which may be single or multi-thickness wall construction.

1.3. ***Safety*** (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • lighting
	  • power equipment
	  • power leads and sources
	  • trip hazards
	  • work site visitors and the public
	  • work site visitors and the public
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

1.4. ***Tools and equipment*** include:	• brick saws • builder's lines • caulking guns • concrete mixers • hammers • levelling equipment • line pins • measuring tapes and rules • mortar boards

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RANGE STATEMENT

	• planks • power leads • scaffolding • shovels • spirit levels • trowels.
1.5. ***Environmental requirements*** include:	• clean-up management • dust and noise • stormwater protection • vibration • waste management.
1.6. ***Statutory and regulatory authorities*** include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.
1.7. ***Quality requirements*** include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCSP3007A Apply plaster by projection machine

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to apply pre-blended plasters and cement render materials on various background surfaces using a projection plastering system.

It includes planning and preparation for the work, selection and preparation of materials, preparation of the work area, application of plaster and cement render, and completion of post work clean-up activities.

The unit does not include swimming pool or pond application.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to use plaster projection equipment for application of pre-blended plaster and cement render materials in construction projects, excluding swimming pools, spas and ponds. It includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction

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Prerequisite units

industry

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant ***information***, confirmed and applied to the ***scope of work*** performed.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Plant, ***tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement.
	1.4. ***Materials*** quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
	1.5. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.6. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and legislative authority*** obligations and applied.
2. Prepare the work area.	2.1. Area to receive pre-blended plasters and cement render materials is determined from plans and specifications.
	2.2. Area is masked up and protection for surrounding areas is applied.
	2.3. Mixing pump is set up and positioned to suit job requirements.
	2.4. Application area is cleared for projection plastering application.
	2.5. Barricades and signage are placed to minimise disruption to application process.
3. Apply pre-blended plasters and render materials.	3.1. Mixing pump is operated to manufacturer recommendations and job requirements.
	3.2. Material is screeded to correct thickness in accordance with specifications.
	3.3. Material is applied using projection plastering techniques to specifications.
	3.4. Required finish is produced on material to job finishes schedule.
4. Clean up.	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation,

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ELEMENT	PERFORMANCE CRITERIA
	regulations, codes of practice and job specification.
	4.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - follow instructions
  - notify completion of work
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- mathematical and numeracy skills to apply measurements and calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- job safety analysis (JSA) and safe work method statements

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REQUIRED SKILLS AND KNOWLEDGE

- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- plastering terminology
- processes for the calculation of material requirements
- projection machine application techniques
- projection machine equipment types, characteristics, uses and limitations
- properties, characteristics and limitations of plastering and cement rendering materials for use with projection machines
- quality requirements
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply of relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools, plant and equipment • communicate and work effectively and safely with others • mix, blend and apply plaster by projection machine to walls and ceilings to a specified finish • mix, blend and apply cement render by projection machine to walls and ceilings to a specified finish.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement

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EVIDENCE GUIDE

- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice,

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EVIDENCE GUIDE

with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to the application of plaster by projection machine
- relevant Australian standards
- safe work procedures relating to the

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RANGE STATEMENT

	application of plaster by projection machine • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Scope of work:	• applications include walls, ceilings, inclined surfaces, sills and arches • substrates for application include blockwork, concrete, stonework and cement sheet.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

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RANGE STATEMENT

Tools and equipment include:	• brushes • joint rules • measuring tapes and rules • plumb bobs • power leads • projection machine and support equipment and tools • scaffolding or working platforms • small tools • spirit levels • squares • straight edges • trowels.
Materials include:	• cement render • cleaning materials • plaster.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • stormwater protection • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering the applicable Acts, regulations and codes of practice.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Co-requisite units Nil

Functional area

Functional area

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CPCCST2001A Prepare for stonemasonry construction process

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit specifies the outcomes required to undertake the preparation processes required to support the laying or placement of stone.

Application of the Unit

Application of the unit This unit of competency supports the achievement of skills and knowledge to prepare for stonemasonry operations and installations, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials***, including correct type of stone and materials other than stone appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2. Prepare work area suitable for construction process.	2.1. Activities to be carried out in work area are identified from type of stonemasonry work and planned procedures according to layout of construction and access to location. 2.2. ***Work area is*** prepared for ***construction process*** according to supervisor's instructions.
3. Use tools, plant and equipment appropriate for construction process.	3.1. Regular hand and power tools suitable for application process are identified from job requirements. 3.2. Hand and power tools are used safely and effectively to carry out processes.
4. Assist with stonemasonry work.	4.1. Selected stone is visually checked to ensure it meets specifications, including colour and matching surrounding area, and is distributed to location. 4.2. Surface is brushed, scraped and washed cleaned of surplus mortar material on completion of stonemasonry process.
5. Clean up.	5.1. Materials are stacked and/or stored for re-use or removal.

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ELEMENT	PERFORMANCE CRITERIA
	5.2. Work area is cleared. 5.3. Tools and equipment are cleaned, maintained and stored. 5.4. Waste is disposed of appropriately.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - drawings and specifications
    - material safety data sheets
    - plans
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to calculate measurement requirements related to lengths and allowances
- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

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REQUIRED SKILLS AND KNOWLEDGE

- interpretation of drawings and specifications
- job safety analysis (JSA) and safe work method statements
- material handling techniques associated with stonemasonry work
- measurement techniques relevant to stone
- types and characteristics of materials used in stonemasonry work
- types and safe use of portable power tools for stonemasonry work
- types and use of hand tools and equipment relevant to stonemasonry work
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to prepare for a range of stonemasonry activities, providing evidence of the ability to: • comply with OHS regulations applicable to workplace operations • comply with organisational policies and procedures, including quality assurance requirements • carry out correct procedures prior to and during the construction processes • demonstrate safe and effective operational use of tools, plant and equipment • adopt and use correct procedures to handle and place materials • communicate with others to ensure safe and effective work site operations.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • construction materials relevant to stonemasonry work • hand and power tools appropriate to stonemasonry work processes

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EVIDENCE GUIDE

- plant and equipment appropriate to stonemasonry work processes
- suitable work area appropriate to construction processes.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

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EVIDENCE GUIDE

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

1.1. ***Information*** includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to preparation for stonemasonry production process
- relevant Australian standards
- safe work procedures relating to preparation for stonemasonry production process
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

1.2. ***Planning and preparation*** include:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies

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RANGE STATEMENT

	• equipment defect identification • work site inspection.

1.3. ***Safety*** (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • dust
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • wind
	  • work site visitors and the public
	  • working at heights
	  • working from platforms
	  • working in confined spaces
	  • working in proximity to others
	  • working with heavy stone
	• use of firefighting equipment
	• use of shifting equipment
	• use of tools and equipment
	• working platforms and scaffolding
	• workplace environmental requirements and safety.

1.4. ***Tools and equipment*** include:	• angle grinders • bolsters • brushes and brooms • hammers • hoses • masonry saws • measuring tapes and rules • mortar boards • power leads

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RANGE STATEMENT

	• scaffolding • shovels • wheelbarrows.

1.5. ***Quality requirements*** include:	• handling of materials
	• preparation of surfaces
	• relevant regulations, including:
	  • Australian standards
	  • internal company quality policy and standards
	  • manufacturer specifications where specified
	  • workplace operations and procedures
	• storage of materials
	• use and maintenance of tools and equipment.

1.6. ***Materials***:	• include:
	  • cement
	  • lime
	  • sand
	• may vary in accordance with stone:
	  • colour
	  • shape
	  • size
	  • type
	• preparation may include:
	  • cutting stone
	  • preparing materials for batching for mortar.

1.7. ***Environmental requirements*** include:	• clean-up management • dust and noise • stormwater protection • waste management.
1.8. ***Statutory and regulatory authority*** includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
1.9. ***Work area preparation*** includes:	• cleaning of strip footings or slab • erecting scaffolding • establishing temporary water and power supply • locating mortar boards

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RANGE STATEMENT

1.10. ***Construction processes*** include:	• preparing access for supply of mortar • setting up concrete mixer. • cleaning stone face • laying stone • preparing for stone laying • work site preparation.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCST2003A Finish stone

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit specifies the outcomes required to undertake the cutting and polishing processes used to finish both hard and soft stone.

Application of the Unit

Application of the unit This unit of competency supports the achievement of skills and knowledge to finish stone, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. Stone hardness is identified using Moh's scale. 1.8. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2. Use abrasives.	2.1. Coolant is used as required by selected abrasives, stones and job requirements. 2.2. Range of grades of abrasives is used in accordance with job requirements and specifications. 2.3. Polishing compounds are used in accordance with job requirements and specifications. 2.4. Various polishing heads are used in correct sequence to provide finish to specification.
3. Use stone cutting equipment.	3.1. Stone is set into place on cutting table to obtain maximum efficiency in cutting. 3.2. Stone is wedged or fixed into place by nailed timber strips to ensure stability and is aligned correctly to cutting blade. 3.3. Adjustments are made to machinery as required by maximum depth of cut and size of stone. 3.4. Primary cutting machines are used appropriate to their cutting capacity. 3.5. Secondary cutting machines are used appropriate to

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ELEMENT	PERFORMANCE CRITERIA
	their cutting capacity.
	3.6. Stone is marked out and cut according to job drawings, specifications and schedules.
4. Polish stone and form edges.	4.1. Adhesives are applied as fillers to stone as required by job.
	4.2. Grinding and polishing heads are set up and operated as required by job.
	4.3. Adjustments are made to machinery in accordance with job requirements.
	4.4. Polishing machinery is used in a manner appropriate to its capacity.
	4.5. Various hand-operated polishing machines are used as required by job to achieve specified finish.
5. Use adhesives and fillers.	5.1. Various filling compounds are selected and used according to job requirements.
	5.2. Various types of adhesives are selected and used according to job requirements.
	5.3. Tinting procedures for fillers and adhesives are selected and used, where required.
	5.4. Various reinforcing materials and techniques are selected and used, where required.
6. Clean up.	6.1. Surfaces are cleaned as required by job in preparation for transport or installation.
	6.2. Surface finishes, such as wax, are applied as required by job.
	6.3. Work area is cleaned up and waste materials disposed of in an appropriate manner and in accordance with Environment Protection Authority (EPA) requirements.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace

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REQUIRED SKILLS AND KNOWLEDGE

responsibilities, such as current work site environmental or sustainability frameworks or management systems

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - drawings and specifications
    - other relevant workplace documentation
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- numeracy skills to workplace requirements including measurements
- problem solving skills to recognise and take action to rectify minor faults and problems
- read and interpret drawings and documentation
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- job safety analysis (JSA) and safe work method statements
- methods of finishing stone
- Moh's scale of stone hardness
- OHS regulations relating to guarding and using static and hand-held power tools and equipment on stone
- range and grades of polishing compounds
- regulations related to safe waste disposal and dust suppression
- role of coolant in stone polishing process
- types and characteristics of adhesives and fillers relevant to finishing stone surfaces
- types of stone and their characteristics
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to finish two types of stone, one hard and one soft, using at least two types of equipment listed in the range statement, providing evidence of the ability to: • comply with OHS regulations applicable to machinery, equipment and workplace operations • apply organisational quality procedures and processes within the context of finishing stone • stabilise stone or equipment, prior to cutting or polishing • select cutting and polishing processes appropriate to stone shape, size and specified finish • use polishing heads in a logical sequence to achieve specified finish • polish, using both hand-held and static polishing machinery • identify typical faults and problems that occur and action required to rectify them • communicate with others to ensure safe and effective workplace operations • complete finishing process to stone to specifications.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge

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EVIDENCE GUIDE

will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- workplace operations
- access to equipment and materials for cutting and polishing stone
- stone relative to cutting and polishing proposed activity
- drawings, specifications and documentation relevant to activity.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and

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EVIDENCE GUIDE

separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to handling stone
- relevant Australian standards
- safe work procedures relating to handling

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RANGE STATEMENT

	stone • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• working platforms and scaffolding
	• workplace environmental requirements and safety.

Tools and equipment include:	• angle grinders • buffs • circular saws • drills • edge polishers • frame saws

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RANGE STATEMENT

	• hole saws • Jenny Lind type polishers • line polishers • milling machines • rise and fall saws • rotating or transverse tables • stationary slab polishers • twin tables • water jets • wire saws.

Quality requirements include:	• attention to specifications of work
	• control of handling procedures
	• quality of materials
	• relevant regulations, including:
	  • Australian standards
	  • internal company quality policy and standards
	  • manufacturer specifications where specified
	  • workplace operations and procedures
	• use and maintenance of equipment
	• workplace operations and procedures.

Materials include:	• cementitious material • chemical adhesive • epoxy and polyester resins • plaster.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Statutory and regulatory authority includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Adhesives applied as fillers may be to:	• apply reinforcing to slabs • fill natural fissures • laminate edges.

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Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCST2004A Lay stone

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit specifies the outcomes required to prepare and lay stone to construct stone structures using a variety of stone.

The stone covers the range of stone used in freestanding and garden walls, load bearing structural walls and veneer facing.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills and knowledge to lay stone products, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2. Bed stone into mortar.	2.1. Prepared stone is selected appropriate to the job and mortar is prepared to designed mix, including any required ***mortar admixtures***, and spread or screeded to form a bed as required. 2.2. Mechanical ties, fixtures and ***reinforcing*** are placed as required and stones are laid to line and in sequence as required by job. 2.3. Packers, wedges, mortar consistency, propping, shoring and forming structures are used to ensure correct joint size, plumb, level and shape. 2.4. Backing materials are used in a manner consistent with job requirements, with cavities maintained as required or specified.
3. Dry bed stone and grout.	3.1. Prepared stone appropriate to job is set in place dry and supported as required by wedges, packers and props. 3.2. Joints are prepared and grout is poured gradually as required to fill voids.
4. Dry stone construction.	4.1. Stone is prepared or selected in a manner appropriate to job and laid to achieve maximum stability using

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ELEMENT	PERFORMANCE CRITERIA
	chips, flat faces and battered angles, on stones, earth sods and clay. 4.2. Capping stone is laid as required by job. 4.3. Walling is laid in a manner that maximises the force of gravity as a stabilising element in structure.
5. Fix slab stone using metal ties and adhesives.	5.1. Prepared stone slabs are fixed to metal or masonry surfaces using adhesives, cement mortar or plaster. 5.2. Metal ties and dowels are used to secure stone slabs as required. 5.3. Dowel cavity is filled with grout or slurry as required in job specification.
6. Finish stone surfaces and joints.	6.1. Stone surfaces are finished as required by job specifications. 6.2. Joints are cleaned and/or raked as required to achieve either final appearance or as preparation for pointing. 6.3. Pointing mortars or adhesives are applied to joints as required by job specifications.
7. Clean up.	7.1. Surfaces are cleaned as required by job. 7.2. Waste materials are disposed of in an appropriate manner and in accordance with Environment Protection Authority (EPA) requirements. 7.3. Tools and equipment are cleaned, maintained and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand

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REQUIRED SKILLS AND KNOWLEDGE

- follow instructions
- read and interpret:
  - drawings and specifications
  - material safety data sheets
- use and interpret non-verbal communication
- use language and concepts appropriate to cultural differences

- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to calculate measurement requirements related to lengths and allowances
- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- AS3700 Masonry in buildings
- Building Code of Australia (BCA) requirements relevant to stonemasonry work
- common finishes used for mortar in masonry
- commonly used range of mortar additives, including plasticisers and their application
- interpretation of work drawings and specifications
- job safety analysis (JSA) and safe work method statements
- measuring and levelling processes relevant to stonemasonry work
- mortar mix types and composition
- techniques for laying and securing stone
- types of stone and their characteristics
- types of stone wall construction
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to construct three stone walls using different types of stone materials listed in the range statement, providing evidence of the ability to: • comply with OHS regulations applicable to workplace operations • display compliance with organisational policies and procedures, including quality assurance requirements within the context of laying stone • select and use appropriate processes, tools and equipment to carry out tasks • demonstrate sound techniques in preparing mortar • display sound and safe application methods to handle stone • demonstrate sound techniques in laying stone to line, level, plumb or to designed alignment • select and use sound techniques to finish stone face to specification • communicate with others to ensure safe and effective workplace operations.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory

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EVIDENCE GUIDE

	or Australian standards' requirements. Resource implications for assessment include: • workplace location • appropriate tools, plant and equipment • scaffolding where applicable • materials suitable to the task • relevant drawings, specifications and documentation. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability

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and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to handling stone
- relevant Australian standards
- safe work procedures relating to handling stone
- signage
- verbal, written and graphical instructions
- work bulletins

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RANGE STATEMENT

	• work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• working platforms and scaffolding
	• workplace environmental requirements and safety.

Tools and equipment include:	• angle grinders • bolsters • hammers • jointing tools • measuring tapes and rules • screed boards • shovels • spirit levels • trowels • wheelbarrows.

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RANGE STATEMENT

Quality requirements include:	• control of handling procedures
	• control of quality of stone
	• relevant regulations, including:
	  • AS3700 Masonry in buildings
	  • internal company quality policy and standards
	  • manufacturer specifications where specified
	  • workplace operations and procedures
	• specification of mix
	• specified finish
	• use and maintenance of equipment.

Materials include:	• basalt • granite • marble • sandstone • other natural or manufactured stone material.
Environmental requirements include:	• waste management • dust and noise • vibration • clean-up management.
Statutory and regulatory authority include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Mortar admixtures include:	• plasticisers • setting retardants • waterproofers.
Reinforcing includes:	• mechanical ties and fixtures • steel rods • welded wire fabric • wire strands.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCST2005A Carry out load slinging of off-site materials

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit specifies the outcomes required to sling and move materials under supervision.

Application of the Unit

Application of the unit This unit of competency supports the achievement of skills and knowledge to carry out load slinging of off-site materials, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2. Move, locate and secure load.	2.1. Shifting/anchorage points are located and identified and slings, tackles, associated lifting gear and tools are selected consistent with needs of task. 2.2. ***Shifting equipment*** and tools are inspected and damaged work items are reported to supervisor. 2.3. Strongbacks/stiffeners are positioned and securely attached as required. 2.4. Load is safely slung, connected to lifting gear and packing is secured to protect load. 2.5. Destination location is prepared to receive load. 2.6. Load is stood vertically if necessary, safely moved to required location and secured in position.
3. Clean up.	3.1. Slings, associated lifting equipment and packing are removed and loose debris and waste material removed and disposed of safely. 3.2. Slings, lifting equipment and tools are cleaned, maintained and safely stored. 3.3. Necessary documentation is completed.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change, and contribute to workplace responsibilities such as current work site environmental/sustainability frameworks or management system
- communication skills to:
  - communicate with team
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - report damaged work items to supervisor
  - use and interpret non-verbal communication, including the use of hand signals
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to workplace requirements
- planning and organisational skills to identify requirements, apply relevant resources and sequence tasks
- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- basic hand signalling techniques
- basic tools, plant and equipment related to materials handling
- hazard identification and prevention methods to be adopted
- job safety analysis (JSA) and safe work method statements
- measurement techniques relevant to slinging and placing materials
- techniques for stacking and storing materials safely and for allowing egress to others and easy access to materials for retrieval
- types and characteristics of materials used in stonemasonry work
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to sling and move materials, providing evidence of the ability to: • comply with workplace and equipment safety requirements of state and territory regulatory authorities • comply with organisational policies and procedures within the context of handling materials and using valuable equipment • select and use appropriate lifting equipment to suit load movement process • connect lifting equipment safely and effectively • apply safe and effective techniques to carry out movement and placement of materials • use appropriate communication techniques with others to assist with moving a load, ensuring safe and effective work site operations.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • workplace • plant and equipment relative to activity

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EVIDENCE GUIDE

- tools and equipment appropriate to materials and activities
- materials appropriate to proposed activities.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

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EVIDENCE GUIDE

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

1.1. ***Information*** includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to load slinging
- relevant Australian standards
- safe work procedures relating to load slinging
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

1.2. ***Planning and preparation*** include:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- equipment defect identification

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RANGE STATEMENT

	• work site inspection.

1.3. ***Safety*** (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of shifting plant and equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

1.4. ***Tools and equipment*** include:	• chain slings and hooks • lifting beams • lifting clutches • mobile pendant operated cranes • nylon ropes • packing • ropes • shackles and eye bolts • spanners • strongbacks.

1.5. ***Quality requirements*** include:	• control of handling procedures
	• quality of materials
	• relevant regulations, including:
	  • Australian standards
	  • internal company quality policy and

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RANGE STATEMENT

	standards • manufacturer specifications where specified • workplace operations and procedures • use and maintenance of equipment.
1.6. ***Materials*** include:	• crates of fittings • packs of metal sections • packs of pipe lengths • packs of sheet material • packs of timber • pallets of bagged material • pre-cast concrete • steel sections • stone sections.
1.7. ***Environmental requirements*** include:	• waste management • dust and noise • vibration • clean-up management.
1.8. ***Statutory and regulatory authority*** includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
1.9. ***Shifting equipment*** refers to:	• equipment excluding that requiring a certificate of competency for operation as specified by state and territory licensing requirements.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCST2006A Identify and use stone products

Modification History

This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

- Changes to descriptor, application, performance criteria (including additional performance criteria), required skills and knowledge, and critical aspects for assessment
- Range of other minor editorial changes

Not equivalent to CPCCST2002A Identify and use stone products

Unit Descriptor

This unit of competency specifies the outcomes required to identify and use suitable natural stone, and stone products manufactured to designed specifications, for both off-site and in situ installation. The unit may include working with others and in a team.

Application of the Unit

This unit of competency supports the work of stonemasons who select and prepare specific types of natural stone and stone products for different work tasks according to job specifications.

Licensing/Regulatory Information

Check with relevant state and territory licensing and regulatory authorities. State and territory jurisdictions may have different regulatory requirements for work carried out on heritage structures.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes.
		1.2	***Work health and safety (WHS) requirements*** are followed according to safety plans and policies.
		1.3	Signage and barricade requirements are identified and implemented.
		1.4	***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and faults are rectified and reported before work begins.
		1.5	Material quantity requirements are identified and calculated according to plans, specifications and ***quality requirements***.
		1.6	***Materials*** appropriate to the work application are obtained, prepared, safely handled and located ready for use.
		1.7	***Environmental requirements*** are identified for the project according to environmental plans and ***statutory and regulatory authority*** requirements.
2	Use industry terms for the identification and use of stone	2.1	Common terms, instructions and information relating to use of stone are understood and used in the workplace.
		2.2	Commonly used symbols and abbreviations are identified and applied.

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	products.	2.3	Key architectural styles and types of materials and products used in stonemasonry are identified.
3	Identify types, size, defects and function of stone products.	3.1	Sources of stone and manufacturing or quarrying techniques required for the production of natural and manufactured stone and stone products are identified.
		3.2	Types of natural stone and architectural styles, sizes and functions of stone products are identified and matched to job specifications.
		3.3	Key features and orientations of patterns in stone are identified.
		3.4	Defects in stone products and the effect on their function are identified.
4	Identify and apply processes and procedures used in processing and manufacturing stone products.	4.1	Methods used in the ***processing and manufacture*** of stone products are identified and applied.
		4.2	Common types and applications of plant and tools used for stone production are identified.
		4.3	Different processes and procedures required for off-site and in situ stone production are identified and applied as part of construction process.
5	Correctly handle and saw stone products.	5.1	Characteristics of common types of stone are identified and appropriate handling techniques are applied.
		5.2	Plant is operated and tools are used according to workplace requirements.
		5.3	Processes and procedures required to produce specific stone products are identified and sequenced according to performance requirements of product.
		5.4	Stone products are sawed according to job specifications and workplace requirements.
6	Clean up.	6.1	Work area is cleared to specifications.
		6.2	Unused materials are stored and waste is disposed of

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according to workplace requirements.

6.3 Tools, plant and equipment are cleaned, maintained and stored.

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - enable clear and direct communication
  - use questioning to identify and confirm requirements
  - share information
  - follow instructions
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to calculate material requirements
- problem-solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to work with others to action tasks

Required knowledge

- architectural styles used in stonemasonry work
- characteristics of different types of natural stone
- drawing conventions and construction terminology used in plans and specifications
- job safety analyses (JSA) and safe work method statements (SWMS)
- measurement techniques relating to stonemasonry work
- types and uses of accessories associated with stone construction
- types of stone and stone products
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the selection and use of a minimum of three stone types from a range of igneous, metamorphic, sedimentary or reconstituted materials that are suitable for nominated purposes, providing evidence of the ability to:

- comply with WHS requirements applicable to workplace operations
- comply with organisational policies and procedures, including quality assurance requirements
- carry out correct procedures prior to and during handling processes
- select and use appropriate processes, tools and equipment to cut stone
- adopt and use correct procedures to handle and place materials
- communicate with others to ensure safe and effective work site operations.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment may include:

- construction materials required to apply stone product
- hand and power tools appropriate to work processes
- plant and equipment appropriate to work processes
- suitable work area appropriate to application processes.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using one or more of the following methods:

- direct observation of tasks in real or simulated work

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conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reviewing relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information may include:

- current Australian standards relating to handling, sawing and using stone products
- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- memos
- regulatory and legislative requirements for handling stone products
- safe work procedures relating to handling stone products
- safety data sheets (SDS)
- signage
- verbal, written and graphical instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Planning and

- assessing conditions and hazards

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preparation may include:

- determining work requirements and safety plans and policies
- identifying equipment defects
- inspecting work sites.

Work health and safety requirements must comply with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures
- hazard control
- hazardous materials and substances
- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including operational risk assessment and treatments associated with:
  - concealed services (water, power and gas)
  - lighting
  - restricted access barriers
  - traffic control
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
- use of firefighting equipment
- use of tools and equipment
- working platforms and scaffolding
- workplace environmental requirements and safety.

Tools and equipment may include:

- angle grinders
- bolsters
- brushes and brooms
- chisels
- clamps
- hammers
- hoses
- level
- masonry saws
- measuring tapes and rules
- mortar boards
- pitching tools
- power leads
- scaffolding
- shovels
- small tools
- stone packers
- wheelbarrows.

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Quality requirements may include:	• attention to specifications of work, including architectural style
	• control of handling procedures
	• quality of materials
	• relevant regulations, including:
	  • Australian standards
	  • internal organisational quality policy and standards
	  • manufacturer specifications where specified
	  • workplace operations and procedures
	• use and maintenance of equipment.

Materials may include:	• basalt • granite • marble • pre-cast concrete • sandstone.
Environmental requirements may include:	• clean-up management • dust and noise control • vibration management • waste management.
Statutory and regulatory authority includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Processing and manufacture may include:	• crushed to aggregate size • crushed to fine particle (dust) size • cut and polished to tile size • cut or finished to pavement section size • natural stone products cut to size.

Unit Sector(s)

Construction

Custom Content Section

Not applicable.

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CPCCST3001A Dress and mould stone

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit specifies the outcomes required to prepare and finish simple mouldings in hard or soft stone.

Application of the Unit

Application of the unit This unit of competency supports the achievement of skills and knowledge to dress and mould stone products, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2. Prepare stone for dressing.	2.1. ***Stone*** is checked for defects or natural inclusions and dimensions of stone are checked for accuracy as required by job and specifications. 2.2. Bedding plane is checked where relevant for correct orientation to suit function and location of finished job.
3. Mark details on stone.	3.1. ***Templates*** are applied square to stone or appropriate to job requirements and marked on adjacent ends of stone. 3.2. Placed templates are checked for twist/wind to ensure stone is marked out true. 3.3. Required template details are scribed or marked so that lines remain indelible for duration of job.
4. Dress a simple moulding.	4.1. ***Mouldings*** are dressed in a staged sequence of fillets and chamfers, or as required by job. 4.2. Each stage of dressing is marked out accurately and as required by job before proceeding with dressing and each stage is checked upon completion for accuracy before proceeding.
5. Finish moulded stone surfaces.	5.1. Stone surfaces are finished using chisels or other hand tools as required by job and specifications. 5.2. Abrasives are used to finish surfaces if required by job and specifications.
6. Clean up.	6.1. Stone is cleaned using water and brush or other appropriate non-corrosive method.

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ELEMENT	PERFORMANCE CRITERIA
	6.2. Tools and equipment are cleaned, maintained and stored. 6.3. Work area is cleared and waste materials disposed of in an appropriate manner and in accordance with Environment Protection Authority (EPA) requirements. 6.4. Templates are cleaned, labelled and stored for reuse.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret drawings and specifications
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to workplace requirements
- planning and organisational skills to identify requirements, apply relevant resources and sequence tasks
- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- interpretation of working drawings and specifications
- job safety analysis (JSA) and safe work method statements

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REQUIRED SKILLS AND KNOWLEDGE

- material handling techniques associated with stonemasonry work
- measuring and marking techniques relevant to stonemasonry work.
- methods of dressing stone
- regulations related to safe waste disposal and dust suppression
- types of stone and their characteristics
- use of templates for stonemasonry work
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to dress hard and soft stone to at least three separate simple moulding types listed in the range statement, providing evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational quality procedures and processes within the context of dressing stone • select and use appropriate processes, tools and equipment consistent with task requirements • sound and accurate techniques used to set out and prepare stone for dressing processes • demonstrate sound techniques in dressing hard and soft stone • display sound application processes in sequencing tasks associated with the shaping of stone • adoption and use of accurate techniques to set out stone and set up templates to mark mould • adopt and use safe and effective procedures to dress and shape stone • complete mould to designed shape and surface finish.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

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EVIDENCE GUIDE

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- hand tools and equipment appropriate to tasks
- working drawings, specifications and templates relevant to tasks
- workshop and related equipment appropriate for required activity
- stone appropriate to the relevant tasks.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete

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EVIDENCE GUIDE

confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to handling stone
- relevant Australian standards
- safe work procedures relating to handling stone
- signage
- verbal, written and graphical instructions

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RANGE STATEMENT

	• work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • control of dust and noise
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment include:	• bevels • brushes • chisels • clamps • cocks combs • dividers and wing compasses • drags • hammers • measuring tapes and rules

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RANGE STATEMENT

	• pitching tools • pneumatic chisels • portable cutters and grinders • power grinder • power leads • punches • scribers • squares • straight edges • tooth chisels.

Quality requirements include:	• attention to specifications of work
	• control of handling procedures
	• quality of materials
	• relevant regulations, including:
	  • Australian standards
	  • internal company quality policy and standards
	  • manufacturer specifications where specified
	  • workplace operations and procedures
	• use and maintenance of equipment.

Materials include:	• igneous rock, including basalt (blue stone) and granite • marble • sandstone.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Statutory and regulatory authority includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Stone types include:	• igneous rock, including basalt (blue stone) and granite • marble • sandstone.
Templates may be made of:	• aluminium sheet • cardboard • plastic • plywood

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RANGE STATEMENT

Moulding types depend on local industry requirements, existing heritage structures or other factors and may include:	• zincalume sheet. • ashlar stopped with external mitre • curved segments • internal mitres • pediment springers • ramp and twist • straight sections.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units

Functional area

Functional area

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CPCCST3002A Shape solid stone

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit specifies the outcomes required to shape stone using a range of methods for shaping to provide stone to required specifications.

Application of the Unit

Application of the unit This unit of competency supports the achievement of skills and knowledge to shape solid stone, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2. Use various hand working methods for shaping dimensional stone.	2.1. Stone is dressed using each tool according to correct application and in appropriate sequence to specification. 2.2. Soft stone is cut accurately to squared sizes as required by job. 2.3. Hard stone is dressed using hammers and axes.
3. Use various power-assisted hand tools for shaping dimensional stone.	3.1. Range of percussion hammers and chisels is used to shape stone at different stages of processing as required by job. 3.2. Rotary, chain and/or oscillating saws are used to cut stone to size and shape as required by job. 3.3. Abrasive machines are used to dress stone surfaces as required by job. 3.4. Equipment is operated in conjunction with jigs and guides for repetitive and fine tolerance work as required by job. 3.5. Adjustments are made to machinery, as required, in accordance with stone and application processes.
4. Set up and operate static machinery for shaping dimensional stone.	4.1. Circular diamond saws are operated to cut squared blocks and operated with rise and fall functions for cutting to profiles as required by job. 4.2. Stone is shaped on lathes both between centres and facework as required by job. 4.3. Core drilling machinery is operated as required by job. 4.4. Moulded sections are shaped on planing machines as required by job.

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ELEMENT	PERFORMANCE CRITERIA
	4.5. Water-jet cutting machinery is operated as required by job.
5. Clean up work.	5.1. Work is cleaned on completion with fresh water and brushes if necessary.
	5.2. Waste materials are disposed of in an appropriate manner and in accordance with Environment Protection Authority (EPA) requirements.
	5.3. Finished stone surfaces are protected as required by job specification.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - drawings and specifications
    - plans
    - schedules
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply measurements and calculations
- planning and organisational skills to identify requirements, apply relevant resources and sequence tasks
- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and

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REQUIRED SKILLS AND KNOWLEDGE

mental abilities.

Required knowledge

Required knowledge for this unit is:

- interpretation of drawings and specifications
- job safety analysis (JSA) and safe work method statements
- measuring and marking techniques used in stonemasonry work
- methods of shaping stone
- regulations related to safe waste disposal and dust suppression
- types of stone and their characteristics
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to shape one hard and one soft stone type to design specifications, providing evidence of the ability to:

- comply with OHS regulations applicable to workplace operations
- apply organisational quality procedures and processes within the context of shaping stone
- select and use appropriate processes, tools and equipment to carry out required tasks
- adopt and use sound and safe techniques in handling and manoeuvring stone
- sound and accurate techniques used to set out stone for shaping processes
- display effective and sound procedures to control dust, noise and hazards
- demonstrate sound and safe application techniques to use equipment and shape stone.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- hand tools and equipment appropriate to tasks
- stone materials applicable to required activities
- suitable work area appropriate to application

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EVIDENCE GUIDE

tasks
- work drawings and documentation.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as

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EVIDENCE GUIDE

	far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed. Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:	• diagrams or sketches • instructions issued by authorised organisational or external personnel • manufacturer specifications and instructions, where specified • material safety data sheets (MSDS) • memos • regulatory and legislative requirements pertaining to handling stone • relevant Australian standards • safe work procedures relating to handling stone • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

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RANGE STATEMENT

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • control of dust and noise
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment used to shape stone include:	• axes • bush hammers • chisels • patent axes • poky • spalling hammers.

Quality requirements include:	• attention to specifications of work
	• control of handling procedures
	• relevant regulations, including:
	  • Australian standards
	  • internal company quality policy and standards
	  • manufacturer specifications where specified
	  • workplace operations and procedures
	• use and maintenance of equipment.

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RANGE STATEMENT

Materials include both hard and soft stones, such as:	• basalt (blue stone) • granite • limestone • sandstone.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Statutory and regulatory authority includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCST3003A Split stone manually

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit specifies the outcomes required to split stone using a range of methods for both hard and soft stone.

Application of the Unit

Application of the unit This unit of competency supports the achievement of skills and knowledge to split stone manually, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2. Use a range of methods for splitting stone.	2.1. Alternative methods are identified for drilling and ***splitting stone***. 2.2. Stone is split and squared by drilling and using plugs and feathers. 2.3. Holes are set out to line and spacings and drilled to depths as specified for type and size of stone. 2.4. Guillotine principles are applied and used for splitting various thicknesses of slabbed stone as required by job or organisation. 2.5. Stone is split using natural lines of cleavage.
3. Clean up work.	3.1. Stone surfaces are finished as required by job and specifications. 3.2. Work is cleaned on completion with fresh water and brushes if necessary. 3.3. Waste materials are disposed of in an appropriate manner and in accordance with Environment Protection Authority (EPA) requirements.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret drawings and specifications
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply measurements and calculations
- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- interpretation of working drawings and specifications relevant to stonemasonry work
- job safety analysis (JSA) and safe work method statements
- material handling techniques associated with stonemasonry work
- measuring and marking techniques relevant to splitting stone
- methods of splitting stone
- regulations related to safe waste disposal and dust suppression
- types of stone and their characteristics
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to split stones to thickness both with and against the grain, providing evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational quality procedures and processes within context of splitting stone • select and use appropriate processes, tools and equipment to carry out tasks • split both hard and soft stone • sequence appropriate tasks associated with splitting stone • adopt and use safe and effective procedures when using power tools and splitting of stone.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • workplace location • hand tools and equipment appropriate to splitting stone • stone appropriate to activity • drawings, specifications and documentation

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EVIDENCE GUIDE

relevant to activity.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language,

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EVIDENCE GUIDE

literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to handling stone
- relevant Australian standards
- safe work procedures relating to handling stone
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Planning and preparation include:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- equipment defect identification
- work site inspection.

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RANGE STATEMENT

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment include:	• axes • bush hammers • chisels • masonry drills • patent axes • plugs and feathers • poky • sledge hammers • spalling hammers • splitting wedges.

Quality requirements include:	• attention to specifications of work
	• procedures in splitting stone
	• relevant regulations, including:
	  • Australian standards
	  • internal company quality policy and standards
	  • manufacturer specifications where

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RANGE STATEMENT

	specified • workplace operations and procedures • use and maintenance of equipment.
Materials include hard and soft stones, such as:	• basalt (blue stone) • granite • limestone • locally available stone • porphyry • sandstone • slate.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Statutory and regulatory authority include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Splitting stone methods may include:	• expanding grout • freezing • hydra splitting • plugs and feathers • v-cut and wedging.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units

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Functional area

Functional area

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CPCCST3004A Dress stone manually

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit specifies the outcomes required to dress stone manually using methods of working stone and tools dependant upon the type of stone.

The unit applies to both hard and soft stone.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills and knowledge to dress stone manually, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes.
	1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies.
	1.3. Signage and barricade requirements are identified and implemented.
	1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement.
	1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***.
	1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
	1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2. Select stone.	2.1. Stone is selected in accordance with type and colour of stone, where applicable and checked for defects or natural inclusions inappropriate for job.
	2.2. Stone is checked for dimensions to allow dressing to produce final design.
3. Dress stone.	3.1. Stone is marked out in a manner appropriate to job plan and specifications at each progressive stage of dressing.
	3.2. Rough blocks are primarily ***dressed*** to establish an oversized stone appropriate to job plan and specifications.
	3.3. Face of stone is dressed to flat surface and sides of stone are dressed off face in accordance with job plan and specifications.
	3.4. Cylinder is dressed in accordance with job plan and specifications.
	3.5. Sphere is dressed in accordance with job plan and specifications.
4. Clean up.	4.1. Surfaces are finished to a standard appropriate to job plan and specifications.

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ELEMENT	PERFORMANCE CRITERIA
	4.2. Stone is cleaned using water and brush or other appropriate non-corrosive method. 4.3. Work area is cleared and cleaned and waste material disposed of safely. 4.4. Tools and equipment are cleaned, maintained and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret drawings and specifications
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply measurements and calculations
- planning and organisational skills to identify requirements, apply relevant resources and sequence tasks
- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- interpretation of working drawings and specifications

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REQUIRED SKILLS AND KNOWLEDGE

- job safety analysis (JSA) and safe work method statements
- material handling techniques related to stonemasonry work
- measuring and marking techniques related to shaping stone
- methods of dressing stone
- regulations related to safe waste disposal and dust suppression
- types of stone and their characteristics
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to dress both hard and soft stone types from those listed in the range statement, providing evidence of the ability to:

- comply with OHS regulations applicable to workplace operations
- apply organisational quality procedures and processes within context of dressing stone
- select and use appropriate processes, tools and equipment to carry out tasks
- demonstrate sound and safe techniques to produce dressed face on stone
- demonstrate accurate setting out of each side and end of stone
- select appropriate sequencing of tasks associated with shaping of stone
- adopt and use safe and effective procedures to dress stone
- regularly check dressing process to ensure work is to set out and size
- dress and finish stone to specification.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

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- workplace location
- hand tools and equipment appropriate to setting out and dressing processes
- stone appropriate to activity
- drawings, specifications and documentation relative to activity.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured

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learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to handling stone
- relevant Australian standards
- safe work procedures relating to handling stone
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Planning and preparation

- assessment of conditions and hazards

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RANGE STATEMENT

include:	• determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment will depend on type of stone being used, designed shape to be produced and will include:	• axes • bevels • cocks combs • drags • drills (power or hand) • hand saws • koblers • mallets and hammers • measuring tapes and rules • pitchers • plugs and feathers • punches • range of chisels

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RANGE STATEMENT

	• scribers • spalling hammers • spirit levels • splitting gads • squares • straight edges • tooth chisels.

Quality requirements include:	• attention to specifications of work
	• control of handling procedures
	• relevant regulations, including:
	  • Australian standards
	  • internal company quality policy and standards
	  • manufacturer specifications where specified
	  • workplace operations and procedures
	• use and maintenance of equipment.

Materials include hard and soft stones, such as:	• basalt (blue stone) • granite • limestone • locally available stone • porphyry • sandstone • slate.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Statutory and regulatory authority includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Dressed methods for stone may include:	• axing • chiselling • drilling • hand sawing • pitching • punching • splitting.

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Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCST3006A Machine stone

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit specifies the outcomes required to use a range of static machine to cut, grind and polish stone.

Application of the Unit

Application of the unit This unit of competency supports the achievement of skills and knowledge to machine stone products, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2. Operate stone machining equipment.	2.1. ***Stone machining equipment*** is selected for the ***machining operation*** required and safely started up and shut down to standard operating procedures in accordance with manufacturer specifications. 2.2. Materials and safety guards are correctly positioned, fitted and used to designed applications. 2.3. Stone machining equipment is operated, monitored and adjusted to achieve specified size, shape and finish. 2.4. Measurements and tolerances are checked for consistency with job requirements and specifications.
3. Operate static diamond saw.	3.1. ***Stone*** is located on movable table aligned with saw blade in accordance with designed cut. 3.2. Stone is fixed or secured into position on table by use of wedges or nailed timber sections to provide stability for sawing. 3.3. ***Cutting blade*** is adjusted for depth of first cut in accordance with type of blade, hardness of stone and safety considerations of operator and other persons. 3.4. Water is turned on for operating of machine and saw

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ELEMENT	PERFORMANCE CRITERIA
	is started up and operated in accordance with manufacturer's safe working and operating procedures. 3.5. Stone is moved by table movement so that blade cutting is at efficient rate without affecting designed operating revolutions of machine. 3.6. Additional cuts are made by lowering saw after each cut and then cutting on return movement of table, until complete.
4. Operate travelling beam saw.	4.1. Stone is located on adjustable table and fixed into stable position, and table is adjusted to align designed cut with saw blade. 4.2. Settings for operation are carried out on a digital panel designed for length of stone as well as width of blade. 4.3. Blade is set to initial cut for operation and machine is switched on and automatically operated in accordance with manufacturer specifications.
5. Operate multi-function cutter, grinder and polisher.	5.1. Machine and equipment are set up with appropriate head/plate fitted and secured to operating spindle according to work application. 5.2. Stone is fixed into location on table according to requirements for machining processes. 5.3. Template is set into place, where applicable, for profile work and cutting and moulding operations. 5.4. Machinery is set up with cutting head set to initial cut and aligned with template in accordance with manufacturer specifications for setting up and operation of machine. 5.5. Machinery operations are carried out to machine manufacturer specifications and job processes for dressing stone to requirements.
6. Carry out grinding and polishing.	6.1. Appropriate grinding plate is selected and fitted to machine according to machine manufacturer specifications and stone surface to be cut and polished. 6.2. Machine is set up for grinding operations and operated in accordance with job and machine manufacturer specifications with grinding and polishing processes carried out using appropriate changes of grit abrasive pads fitted in accordance with type of stone being finished. 6.3. Machine operations are monitored and water support

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ELEMENT	PERFORMANCE CRITERIA
	maintained to cutting and polishing applications.
7. Shut down machine operations.	7.1. Machine shut-down procedures are carried out to machine manufacturer specifications. 7.2. Supporting material, wedges and clamps are removed from stone and machine table. 7.3. Finished or machined stone is removed carefully without damage and stored. 7.4. Machine and supporting equipment and accessories are cleaned, maintained and checked for wear or deterioration in accordance with manufacturer specifications.
8. Clean up.	8.1. Area is cleaned to specification. 8.2. Waste material is removed and placed into job waste bins. 8.3. Tools and equipment are cleaned, inspected, maintained and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret drawings and specifications
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- interpret drawings and specifications
- numeracy skills to apply measurements and calculations
- planning and organisational skills to identify requirements, apply relevant

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REQUIRED SKILLS AND KNOWLEDGE

resources and sequence tasks

- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- interpretation of drawings and specifications
- job safety analysis (JSA) and safe work method statements
- measuring and marking techniques relevant to stonemasonry work
- methods of dressing stone
- types and use of templates for stonemasonry work
- types of stone and their characteristics
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to cut, grind and polish to specification at least three types of stone products listed in the range statement, providing evidence of the ability to: • comply with OHS regulations applicable to workplace operations • comply with organisational policies and procedures • select and use appropriate processes, tools and equipment to carry out tasks • apply organisational quality procedures and processes within the context of setting and anchoring stone facades • demonstrate sound techniques in dressing hard and soft stone • select stone consistent with specification for material and colour • accurately set out and install fixing brackets • demonstrate safe handling practices in moving and placing stone • fix stone to position and structure • fix stone to line, level and plumb with clamps securing components • identify typical faults and problems that occur and action required to rectify them • communicate with others to ensure safe and effective workplace operations • complete stone facade to specification.
Context of and specific resources	This competency is to be assessed using standard

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EVIDENCE GUIDE

for assessment

and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- work location for installation of stone
- tools, plant and equipment appropriate to installation processes
- construction materials relevant to proposed activity
- appropriate documentation relevant to task.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected

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EVIDENCE GUIDE

must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to handling stone
- relevant Australian standards

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RANGE STATEMENT

	• safe work procedures relating to handling stone • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment include:	• brooms • brushes • clamps • hammers • jigs • measuring tapes and rules

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RANGE STATEMENT

	• shovels • spanners • spirit levels • squares • wedges.
Quality requirements include:	• internal company quality policy and standards • manufacturer specifications • relevant regulations including Australian standards • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Statutory and regulatory authority includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Stone machining equipment includes:	• block squaring machines • drilling machines • frame or gang saws • Jenny Lind type polishers • multi-blade saws • multi-functional cutter, grinder and polisher (Jenny Lind type) • multi-head static polishers • planing machines • shaping machines • slab splitting machines • static diamond circular saws • travelling beam circular saws.
Machining operation includes:	• bevelling • drilling • grinding • polishing • sawing.
Types of ***stone*** include:	• igneous rock, including basalt (blue stone) and granite • limestone • marble • sandstone.

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RANGE STATEMENT

Cutting blades include:

- carborundum
- diamond.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCST3007A Turn stone

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit specifies the outcomes required to turn stone to produce a designed finished product. It includes preparing stone, operating a lathe, dressing stone and finishing a surface.

Application of the Unit

Application of the unit This unit of competency supports the achievement of skills and knowledge to turn stone products, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. Stone quality identified, selected and ***prepared*** for turning. 1.8. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2. Construct templates.	2.1. Appropriate template material is selected and ***template*** prepared and cut to required shape or design using appropriate tools. 2.2. Template is applied to stone for basic roughing out procedure as required by design, and appropriate tools and machines are selected consistent with job requirements.
3. Identify applications of lathe work to stonemasonry.	3.1. Specific features of lathe applications and methods of handling and holding work applicable to lathe operation are identified and used. 3.2. Machine operations, including pre-service checks, are identified and machine speeds and feed rates are calculated.
4. Operate lathe and turn stone.	4.1. Job sheet is prepared as service record of lathe operation where applicable, and correct lathe cutting tools are selected and prepared for use. 4.2. Correct alignment of talkstock is accurately performed.

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ELEMENT	PERFORMANCE CRITERIA
	4.3. Pre-service checks are correctly performed in accordance with manufacturer specifications and machine working speeds and feed rates.
	4.4. Roughing and finishing areas are set by calculations from operations sheet specifications.
	4.5. Holding devices are correctly applied to work piece and lathe is operated through a dry run check before lathe start-up procedure is applied.
	4.6. Lathe ***operation*** is performed to turn stone to match contour of template.
5. Finish and seal stone.	5.1. Correct contour conformity to template is checked, stone is turned and surface is finished to specification.
	5.2. Completed stonemasonry work is removed from lathe and prepared for sealant application as specified.
	5.3. Sealing solutions and compounds are applied to manufacturer specifications.
6. Clean up.	6.1. Debris and waste materials are removed on completion of process.
	6.2. Re-usable and recyclable materials are salvaged and stored.
	6.3. Lathe accessories are removed and tools and equipment are cleaned, maintained and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret drawings and specifications

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REQUIRED SKILLS AND KNOWLEDGE

- use and interpret non-verbal communication
- use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply measurements and calculations
- planning and organisational skills to identify requirements, apply relevant resources and sequence tasks
- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- interpretation of drawings and specifications
- job safety analysis (JSA) and safe work method statements
- measurement techniques relative to design shapes in stone
- processes and techniques for finishing stone surfaces
- processes for preparation of stone
- techniques for operating a lathe
- techniques for safe handling of material relevant to stonemasonry work
- techniques for turning and shaping stone
- types and uses of templates for lathe work
- types and uses of cutting tools associated with turning stone
- types and uses of hand tools and equipment relevant to setting up and turning stone
- types of stone and their characteristics
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to prepare and turn stone and produce two different finished, turned products using at least two of the stone material types listed in the range statement, providing evidence of the ability to:

- comply with OHS regulations applicable to workplace operations
- comply with organisational policies and procedures, including quality assurance requirements within the context of producing turned stone
- demonstrate safe and effective operational use of tools and equipment with processes
- adopt and use correct procedures to handle and place material
- demonstrate sound techniques to accurately produce template to designed profile
- demonstrate sound and safe procedures to dress stone to requirements in preparation for turning
- display sound understanding of turning work applications and selection of appropriate cutting tools
- demonstrate sound techniques to set up and prepare material and lathe for lathe operation
- display sound and safe techniques to cut, dress and finish stone to shape and specifications
- communicate with others to ensure safe and effective workplace operations.

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EVIDENCE GUIDE

Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • materials relative to the activity • hand tools, machinery and equipment appropriate to activity • suitable work area • drawings and documentation relevant to activity. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace

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EVIDENCE GUIDE

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements

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RANGE STATEMENT

	pertaining to handling stone • relevant Australian standards • safe work procedures relating to handling stone • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment include:	• abrasive heads • abrasive sheets • dividers and calipers • grinders

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RANGE STATEMENT

	• measuring tapes and rules • range of cutting chisels • scribers • spirit levels • squares • straight edge.

Quality requirements include:	• attention to specifications of work
	• quality of materials
	• relevant regulations, including:
	  • Australian standards
	  • internal company quality policy and standards
	  • manufacturer specifications where specified
	  • workplace operations and procedures
	• use and maintenance of machinery.

Materials include:	• granite • limestone • marble • sandstone.
Preparing stone for turning operations includes:	• boring • cutting • dressing • milling • shaping.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Statutory and regulatory authority includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Template may be made of:	• aluminium sheet • cardboard • plastic sheet • plywood • zincalume sheet.
Operations with turning stone include:	• boring • cutting • shaping to parallel

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RANGE STATEMENT

- shaping to taper
- shaping to template.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCST3009A Use computer-controlled static machinery to produce stone components

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit specifies the outcomes required to use computer-controlled machining applications to produce components, including curved and straight moulds, levels and cuts in hard and soft stone.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills and knowledge to use computer-controlled static machinery to produce stone components, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2. Carry out data input.	2.1. Programming terms, methods, limits and data storage capacity are determined and stated consistent with job requirements of a specification machine. 2.2. Program is written, entered and edited to produce straight and circular tool movements, compensating for tool profiles.
3. Transfer program to machine control.	3.1. Methods of transferring programs into machinery memory are identified and recorded. 3.2. Program is loaded into machine memory using appropriate techniques applicable to job and ***machinery*** specifications.
4. Operate loaded program to control the machine.	4.1. Program is operated through dry run simulation mode, testing all alarm settings, and is edited where required using control station. 4.2. Specified ***work pieces*** are produced using automatic mode as per manufacturer specifications.
5. Clean up.	5.1. Debris and waste materials are removed on completion of process. 5.2. Re-usable and recyclable materials are salvaged and

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ELEMENT	PERFORMANCE CRITERIA
	stored. 5.3. Tools and equipment are cleaned, maintained and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret drawings, specifications and job designs
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- basic keyboarding skills
- basic problem and fault finding skills with software applications
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to workplace requirements
- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- construction materials and their characteristics
- handling techniques for material relative to stonemasonry work
- hardware requirements for software use

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REQUIRED SKILLS AND KNOWLEDGE

- job safety analysis (JSA) and safe work method statements
- measuring techniques relevant to dimensions and shape
- range of software applications appropriate to computer numerically-controlled (CNC) equipment
- types of machines and machining processes, including computer-controlled machinery
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to produce three separate stone components using two types of stone material listed in the range statement, providing evidence of the ability to: • comply with OHS regulations applicable to workplace operations • select and use appropriate processes, tools and equipment to carry out application tasks • apply organisational quality procedures and processes within context of operating computer-controlled machinery • input data to achieve job requirements • demonstrate sound procedures with machine operated through a reduced speed dry run to check functions and alarms • demonstrate sound and safe techniques to set stone into place for machine operations • demonstrate correct procedures in start-up and shut-down procedures for machining operations • produce products to design in accordance with job specifications and drawings • identify faults or problems that may occur and necessary action taken to rectify • communicate with others to ensure safe and effective workplace operations.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

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EVIDENCE GUIDE

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- CNC machinery applicable to proposed activity
- range of cutters, heads and required tools and equipment
- machining project and specifications relevant to activity
- data and software programs relevant to application activity
- material applicable to activity.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace
- where the assessment is part of a structured

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EVIDENCE GUIDE

learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to handling stone

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RANGE STATEMENT

	• relevant Australian standards • safe work procedures relating to handling stone • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment include:	• brooms • brushes • clamps • dividers and wing compasses • measuring tapes and rules

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RANGE STATEMENT

	• packers • scribers • set spanners • shovels • squares.

Quality requirements include:	• control of handling procedures
	• procedures for computer controlled production
	• quality of materials
	• relevant regulations, including:
	  • Australian standards
	  • internal company quality policy and standards
	  • manufacturer specifications where specified
	  • workplace operations and procedures.

Materials include:	• hard stone • reconstituted stone • soft stone.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Statutory and regulatory authority includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Machinery operations include:	• boring • cutting • cutting, including letters • forming • milling • shaping • turning.
Work pieces are processed using or following:	• curved contours. • straight edge.

Unit Sector(s)

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Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCST3010A Set out and cut letters in stone

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit specifies the outcomes required to use hand applied skills in the use and adaptation of methods and equipment for the production of a range of letters and fonts set in stone or similar material.

Application of the Unit

Application of the unit

This unit of competency supports the achievement of skills and knowledge to set out and cut letters in stone products, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2. Select stone.	2.1. Stone is selected for quality, grain and dimensions to suit job specifications. 2.2. ***Surface for lettering*** is prepared for setting out process in accordance with type of stone and specifications.
3. Set out for lettering.	3.1. Drafting skills are used to accurately set out ***lettering*** to full size for transference to work surfaces using ***templates or stencils*** and fonts appropriate to cemetery monument set-out and design. 3.2. Fonts are set out appropriate to architectural settings and to suit a variety of commercial signage applications. 3.3. Set out lettering is accurately transferred to stone face by use of appropriate transfer method.
4. Cut and form traditional and contemporary letters.	4.1. Raised and flush letters are cut and formed in stone to set-out designed shapes. 4.2. V-formed letters are cut and formed in stone to set-out designed shapes. 4.3. Decorative ornamental work in lettering is cut and formed in stone to set-out designed shapes.

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ELEMENT	PERFORMANCE CRITERIA
5. Cut and form innovative forms of lettering.	5.1. Innovative design and technique for working letters in stone are developed and drafted into set-out. 5.2. Drafted ***design is transferred*** to prepared surface by an appropriate method. 5.3. Lettering is cut and formed in stone to designed shapes and style of cut.
6. Clean up.	6.1. Final stone finish is cleaned to specification. 6.2. Waste materials are disposed of according to EPA requirements. 6.3. Tools are cleaned, maintained and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - identify letters in order to check spelling
  - read and interpret:
    - client's brief
    - drawings and specifications
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply measurements and calculations
- planning and organisational skills to identify requirements, apply relevant resources and sequence tasks
- problem solving skills to recognise and take action to rectify minor faults and

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REQUIRED SKILLS AND KNOWLEDGE

problems

- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- drawing and sketching techniques
- interpretation of drawings and specifications
- job safety analysis (JSA) and safe work method statements
- lettering techniques relevant to stonemasonry work
- materials handling techniques
- measuring and setting out processes related to layout of signs or lettering
- methods of working stone
- traditional and contemporary font styles used in stonemasonry work
- types and use of portable power tools relevant to stonemasonry work
- types and use of stencils and templates
- types and use of tools and equipment relevant to dressing stone and processes for cutting letters
- types of stone and their characteristics
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to produce a range of stone letters in different fonts, providing evidence of the ability to:

- comply with OHS regulations applicable to workplace operations
- comply with organisational policies and procedures, including quality assurance requirements within the context of lettering in stone
- select and use appropriate processes, tools and equipment to carry out tasks
- demonstrate sound and accurate techniques to draft lettering to design requirements
- prepare face for lettering, carried out to surface finish and setting out specifications
- accurate setting out of letters to form balanced presentation
- check spelling prior to transference or cutting processes
- demonstrate sound and accurate techniques to transfer design to stone face
- demonstrate correct procedures and sound techniques to use tools and equipment to produce lettering to design
- provide protection to surrounding area during application processes
- complete lettering and finish surface to design and specifications
- communicate with others to ensure safe and

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EVIDENCE GUIDE

	effective workplace operations.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • materials relative to the activity • hand and power tools appropriate to activity • plant and equipment appropriate to activity • suitable work area appropriate to activity • appropriate drawings, documentation and drawing or sketching equipment relevant to activity. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over

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EVIDENCE GUIDE

a period of time reflecting the scope of the role and practical requirements of the workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)

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RANGE STATEMENT

	• memos • regulatory and legislative requirements pertaining to handling and cutting stone • relevant Australian standards • safe work procedures relating to handling and cutting stone • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment include:	• clamps • drafting equipment • hammers

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RANGE STATEMENT

	• lettering chisels • mallets • masonry drills • measuring tapes and rules • pneumatic chisels, including lettering chisels • power grinders • punch • scribers • sculptor's chisels • squares.

Quality requirements include:	• attention to specifications of work
	• control of handling procedures
	• finishing of stone surfaces
	• quality of materials
	• relevant regulations, including:
	  • Australian standards
	  • internal company quality policy and standards
	  • manufacturer specifications where specified
	  • workplace operations and procedures
	• use and maintenance of equipment.

Materials include:	• granite • marble • reconstituted stone • slate.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Statutory and regulatory authority includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Surfaces for lettering include:	• dressing • milling or cutting • painting surface for setting out • polishing • sandblasting.
Lettering may extend beyond	• heraldry • iconography

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RANGE STATEMENT

recognised fonts to include:	• symbols.
Templates and stencils may be made of:	• aluminium sheet • cardboard • plastic sheet • plywood • zincalume sheet.
Design transfer involves:	• computer aided design (CAD) equipment to assist setting out, such as vinyl cut out • direct drafting • stencils • templates • tracings.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCST3011A Plan monument construction

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit specifies the outcomes required to prepare plans and specifications and coordinate the planning phase of monumental construction in cemeteries.

Application of the Unit

Application of the unit This unit of competency supports the achievement of skills and knowledge to plan stone monument construction, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.5. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.6. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2. Identify design requirements for various monuments.	2.1. Range of monuments covered by AS4204 Headstones and cemetery monuments, and features and components involved in monumental construction are identified and applied. 2.2. Legislation, regulations and codes relating to masonry work are identified and site features influencing ***design*** are applied from site visit or report.
3. Prepare plans and specifications for construction and installation.	3.1. Foundation design is selected in accordance with AS4204, job safety analysis (JSA) and safe work method statements, proposed monument and foundations. 3.2. Materials are selected in accordance with regulations, site conditions and customer requirements. 3.3. Drawings and specifications are prepared to requirements of approving authority, where applicable.
4. Check details, edit drawings and specifications for submission.	4.1. Specifications and drawing details are checked to ensure consistency with client brief and regulatory authority requirements. 4.2. Documentation and drawings are accurately copied and distributed.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation
    - plans
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- numeracy skills to apply measurements and calculations
- planning and organisational skills to identify requirements, apply relevant resources and sequence tasks
- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- AS4204 Headstone and cemetery monuments
- basic design of cemetery monuments
- Building Code of Australia (BCA) requirements relevant to stonemasonry work
- common materials used in monumental construction
- interpretation of drawings and specifications
- JSA and safe work method statements
- measuring and levelling techniques and processes relevant to stonemasonry work
- regulatory authorities and agencies controlling monumental construction
- types and characteristics of soils and foundations

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REQUIRED SKILLS AND KNOWLEDGE

- types and performance of concrete footings.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to design and plan installation of a stone monument to a client's brief, providing evidence of the ability to:

- comply with OHS regulations applicable to workplace operations
- appropriately select available data consistent with requirements of activity
- apply organisational quality procedures and processes within the context of planning monumental construction
- gather and address in planning process, information relating to site regulations/caveats and construction requirements
- identify burial site location on site drawing and location on site
- select materials in accordance with cemetery proposed monument and AS4204 requirements
- use construction fixing, fastening and finishing requirements specified in final design.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- drawing equipment and appropriate workplace

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EVIDENCE GUIDE

- Australian standards and BCA
- brief relevant to proposed activity
- cemetery data relevant to the design project.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

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Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to handling stone
- relevant Australian standards
- safe work procedures relating to handling stone
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Planning and preparation include:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- equipment defect identification

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RANGE STATEMENT

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• work site inspection.
	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Quality requirements include:	• internal company quality policy and standards • manufacturer specifications • proposed monument and foundations • relevant regulations, including AS4204 Headstones and cemetery monuments • workplace operations and procedures.
Materials include:	• basalt • granite • marble • pre-cast concrete sections • reconstituted stone.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Statutory and regulatory	• federal, state and local authorities

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RANGE STATEMENT

authority includes:	administering applicable Acts, regulations and codes of practice.
Design includes:	• design for headstone • design of cover stone • design of monument • design of side, front and back stones • footings for monument • foundation material • method of assembling • methods of joining • type of stone.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCST3012A Build stone veneer walls

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit specifies the outcomes required to build single leaf, stone block facing to metal and timber wall framing.

Application of the Unit

Application of the unit This unit of competency supports the achievement of skills and knowledge to build stone veneer walls, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with hazards, safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. in consideration of ***hazards***. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2. Select and prepare materials and equipment.	2.1. Appropriate ***shifting equipment*** is installed and tested to OHS regulations and job requirements, where applicable. 2.2. Working platforms and scaffolding are erected in accordance with OHS regulations and job requirements.
3. Set out veneer stonemasonry work.	3.1. Location and structural details of stonemasonry work are identified from drawings and job specifications and datum or level line is established. 3.2. Stonemasonry work is set out to location and dimensions from drawings and specifications.
4. Construct base stonemasonry work.	4.1. Mortar is mixed to specifications and in accordance with AS1316 Masonry cement. 4.2. Stonemasonry work gauge is determined and set-out rod prepared. 4.3. Base stonemasonry work is constructed for veneer construction to requirements of AS3700 Masonry in buildings.
5. Construct veneer	5.1. Timber/steel ***structural*** frame is checked to ensure it is ready for stonemasonry work veneer, without

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ELEMENT	PERFORMANCE CRITERIA
walls.	protrusion into required cavities.
	5.2. Stonemasonry work is laid and completed to job drawings and specifications with damp proof course laid in accordance with specifications and AS2904 Damp proof courses and flashings.
	5.3. Reflective foil laminate is installed to comply with AS1940 The storage and handling of flammable combustible liquids and AS3700.
	5.4. Ventilation for veneer construction is built in to specifications to requirements of as per AS1684 Residential timber framed construction, and Building Code of Australia (BCA).
	5.5. Wall ties are positioned and fixed to timber/steel framework correctly to AS2699 Wall ties on masonry construction.
	5.6. Openings are constructed and flashings installed to job specification and cavities are kept clear of mortar droppings and bridging.
	5.7. Lintels are installed to job specifications and top stonemasonry work is constructed to eaves level to AS3700 requirements.
	5.8. Scaffolding is erected as required in accordance with job requirements and OHS regulations.
	5.9. Walls are built to gauge straight and true in plumb, line and level within the tolerances set out in AS3700.
	5.10. Control joints are formed in accordance with locations on job drawings and specifications and AS3700 requirements.
	5.11. Weepholes, brick/block reinforcing, vermin proofing and wall flashing are located and built in, where required, to job specifications.
	5.12. Sills are cut where required and laid to line in accordance with job specifications.
6. Rake and rule joints.	6.1. Joints to laid stonemasonry work are raked or ruled to correct depth and profile in accordance with job specifications.
	6.2. Stonemasonry work is brushed down prior to drying to remove unwanted mortar.
7. Clean up.	7.1. Stonemasonry work is cleaned using dry, liquid or chemical means in accordance with type of stone and specifications.
	7.2. Area is cleared of waste, material, scaffolding and

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ELEMENT	PERFORMANCE CRITERIA
	equipment and waste and unwanted material are disposed of safely. 7.3. Unused materials are stored/stacked and tools and equipment cleaned, maintained and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret drawings and specifications
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply calculations
- planning and organisational skills to identify requirements, apply relevant resources and sequence tasks
- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- Australian standards
- BCA
- interpretation of drawings and specifications

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REQUIRED SKILLS AND KNOWLEDGE

- job safety analysis (JSA) and safe work method statements
- measuring, levelling and calculation processes relevant to stonemasonry work
- methods of fixing stone veneer
- range of commonly used mortar additives
- safe use of scaffolding
- types and safe use of lifting equipment
- types of mortar mix and composition
- types of stone and their characteristics
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to fix stone veneer to at least one of the structural types listed in the range statement, providing evidence of the ability to:

- comply with OHS regulations applicable to workplace operations
- select and use of appropriate processes, tools and equipment for carrying out tasks
- apply organisational quality procedures and processes within the context of stone veneer construction
- select stone consistent with specification for material and colour
- use safe handling practices in moving and placing stone
- fix stone to position and structure
- use safe and effective procedures to lay a stone wall to alignment and plumb
- fix and finish wall ties of stone face to specifications
- comply with organisational policies and procedures
- demonstrate accurate measuring and setting out techniques
- determine wall location and set-out accurately
- lay stone to line level, plumb and gauge
- apply safe and effective procedures in erecting scaffolds
- identify faults and problems that occur and take necessary action to rectify

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	• communicate interactively with others to ensure safe and effective work operations are carried out • clean up cavities, wall and work area • complete base and stone veneer construction to specification.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • work location for stone veneer activity • tools, plant and equipment appropriate to construction processes • construction materials relevant to proposed activity • appropriate documentation relevant to task. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and

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environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational

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RANGE STATEMENT

	or external personnel • manufacturer specifications and instructions, where specified • material safety data sheets (MSDS) • memos • regulatory and legislative requirements pertaining to building stone veneer walls • relevant Australian standards • safe work procedures relating to building stone veneer walls • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and

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RANGE STATEMENT

	safety.
Hazards include:	• barricades • dust • excessive noise nearby • obstructions to clear access for supply • other work personnel • power leads • wind.
Tools and equipment include:	• angle grinders • chisels • concrete mixers • dumpy levels • jointing tools • line pins • masonry saws • mason's squares • measuring tapes and rules • mortar boards • pitching tools • plumb rules • power leads • profiles • scaffolding • shovels • spirit levels • straight edges • string lines • trowels • wheelbarrows.

Quality requirements include:	• application procedures
	• attention to specifications of work
	• colour and shape of stones
	• control of handling procedures
	• mortar mix/composition
	• relevant regulations, including:
	  • Australian standards:
	  • AS1316 Masonry cement
	  • AS2699 Wall ties on masonry construction
	  • AS2904 Damp proof courses and

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RANGE STATEMENT

	flashings • AS1225 Clay building bricks • AS2733 Masonry units • AS3700 Masonry in buildings • internal company quality policy and standards • manufacturer specifications where specified • workplace operations and procedures • attention to specifications of work.
Materials for veneered construction may be:	• coursed • random regular • regular • uncoursed.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Statutory and regulatory authority includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Shifting equipment includes:	• elevating work platforms • gin poles • mechanised hoists • shear legs.
Structural considerations may include:	• metal wall framing • timber wall framing.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Co-requisite units Nil

Functional area

Functional area

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CPCCST3013A Carry out cemetery monument fixing

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit specifies the outcomes required to fix a monumental stone, using granite, marble, basalt, pre-cast concrete sections or reconstituted stone.

Application of the Unit

Application of the unit This unit of competency supports the achievement of skills and knowledge to carry out cemetery stone monument fixing, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2. Construct footings and prepare monument stones.	2.1. Monument footings are set out and excavated to dimensions from drawings and specifications. 2.2. Reinforcement is placed, formwork fixed and concrete poured to provide footings to specifications. 2.3. Delivered stone is checked for conformity to size, design and specifications. 2.4. Layout is set out on footings to dimensions of design and appropriate lifting equipment is installed and tested or made ready to OHS regulations and job requirements, where applicable.
3. Set up side stones into place.	3.1. Side stones are stood up into position on packing of cement sheet or stone pieces with packing adjusted to provide slight fall towards front stone. 3.2. Side stones are checked for plumb and packing is adjusted where required. 3.3. Measurement for diagonals and parallel are checked to be true and stones are checked for alignment by levelling at both front and back ends of side stones.
4. Prepare dowel joints.	4.1. Depth of abutting dowel holes is checked for measurement and dowels are measured and marked

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ELEMENT	PERFORMANCE CRITERIA
	to length (10 mm) and cut to marks. 4.2. Dowels are inserted in or located near applicable holes.
5. Stand up front and back stones.	5.1. Mortar is mixed to specification and inserted into side stone holes and designated dowels are inserted into mortared holes to full depth. 5.2. Back stone is positioned on timber packing ready for lifting into place. 5.3. Timber pieces are placed against side stones to avoid chipping in lifting. 5.4. Mortar is placed to fill holes, back stone is raised into position and manoeuvred into close joints, and packing is adjusted to ensure back stone level. 5.5. Front stone is located, raised and manoeuvred into position to finish with joints to specifications and level.
6. Grout base and joints.	6.1. Grout is prepared and mixed to specification and joints between kerb stones and base is packed slightly with grout to specifications. 6.2. Kerb joints are cleaned with wet cloth and grouted to specifications.
7. Fix headstone to backstone.	7.1. Dowels for joints are measured and cut to specifications with dowel holes filled with mortar and dowels placed fully into backstone. 7.2. Headstone is raised and lowered carefully into place and finished plumb and level to specification.
8. Fill centre and finish with chip top.	8.1. Centre area is filled and finished to specified base. 8.2. Brick or concrete supports are placed in each corner and maximum 50 mm thick reinforced concrete slab is poured to specification. 8.3. Bluestone and granite screening are mixed and spread to specified finished level.
9. Fit cover stone and finish monument.	9.1. Dowels for joints, where applicable, are measured and cut to specifications. 9.2. Centre area is filled to specifications, dowel holes are filled with mortar and dowels are placed fully into position. 9.3. Cover stone is ***shifted*** into place and rested upon timber packing pieces and lowered into place using wedges to finish in position. 9.4. Pointing/grouting material is prepared and applied to

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ELEMENT	PERFORMANCE CRITERIA
	joints, finishing to specification.
10. Clean up.	10.1. Monument is cleaned down and polished where applicable to specification. 10.2. Area is cleared and waste material disposed of safely. 10.3. Tools and equipment are cleaned, maintained and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret drawings and specifications
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply measurements and calculations
- planning and organisational skills to identify requirements, apply relevant resources and sequence tasks
- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

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REQUIRED SKILLS AND KNOWLEDGE

Required knowledge for this unit is:

- Australian standards: 4204 Headstones and Cemetery Monuments, AS2904 Damp proof courses and flashings, AS3700 Masonry in buildings and AS2699 Wall ties on masonry construction
- interpretation of drawings and specifications
- job safety analysis (JSA) and safe work method statements
- measure and levelling techniques relevant to stonemasonry work
- properties and performance of concrete footings
- stone monument construction methods
- types and performance of adhesives and sealants used in stonemasonry work
- types and safe use of shifting equipment
- types of stone and their characteristics
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to install a cemetery monument using any of the materials listed in the range statement, providing evidence of the ability to:

- comply with OHS regulations applicable to workplace operations
- comply with organisational policies and procedures
- select and use appropriate processes, tools and equipment to carry out installation tasks
- apply organisational quality procedures and processes within the context of installing cemetery monuments
- install concrete footings to location and level
- demonstrate accurate measurement of stone sections and setting out for monument
- adopt and use safe and effective procedures to fit and fix front, side and backstones
- use correct procedures to place and fix headstone
- complete installation and finish to specifications. identify typical faults and problems that occur and action required to rectify them interactively communicate with others to ensure safe and effective workplace operations.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge

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EVIDENCE GUIDE

will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- site location for proposed activity
- materials appropriate to required constructions activity
- hand and power tools, plant and equipment appropriate to applications tasks
- drawings and specifications relevant to proposed activity.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and

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EVIDENCE GUIDE

separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to handling stone and concrete
- relevant Australian standards
- safe work procedures relating to handling

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RANGE STATEMENT

	stone and concrete • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment include:	• air compressor and hoses • concrete mixers • fencing bars • generators • hacksaws • hammers • impact drills

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RANGE STATEMENT

	• masonry chisels • measuring tapes and rules • pinch bars • power grinders • power leads • rollers • shovels • spirit levels • squares • trowels • wheelbarrows.

Quality requirements include:	• attention to finish of monuments
	• attention to specifications of work
	• relevant regulations, including:
	  • AS4204 Headstones and cemetery monuments
	  • internal company quality policy and standards
	  • manufacturer specifications where specified
	  • workplace operations and procedures.

Materials include:	• basalt • granite • marble • pre-cast concrete sections • reconstituted stone.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Statutory and regulatory authority includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Shifted includes using:	• gin poles • hydraulic or mechanical jacks • shear legs.

Unit Sector(s)

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Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCST3014A Set and anchor stone facades

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit specifies the outcomes required to prepare shift, set and anchor a variety of stone facades for a construction project.

Application of the Unit

Application of the unit This unit of competency supports the achievement of skills and knowledge to set and anchor stone product facades, which may include working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented in consideration of ***hazards***. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and ***quality requirements***. 1.6. Fixing connection materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2. Prepare stone for dressing.	2.1. Stone facade erection is planned consistent with AS3850 Tilt up concrete construction. 2.2. Delivered stone is checked for conformity to size and colour against specifications and provided material sample. 2.3. Area of ***structure*** to receive stone for facade is set out for line and level in accordance with job drawings and dimensions and datum or level line is established for base course of stone components. 2.4. Area of structure to receive stone components is prepared consistent with manufacturer's fixing recommendations, site drawings and specifications. 2.5. Brackets or anchors are installed to structure for line of placement to specifications for structural fixing. 2.6. Steel dowels are fitted to base where specified to provide key for base course of components. 2.7. Stone is checked for faults prior to installation and stone components are prepared, lifting locations checked and lifting gear attached in accordance with manufacturer requirements and AS3850.

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ELEMENT	PERFORMANCE CRITERIA
3. Shift, erect and fix stone.	3.1. Scaffolding is erected, where required, to job requirements and OHS regulations. 3.2. Slings, clutches and other predetermined rigging equipment are selected to job requirements and inspected for correct function. 3.3. Stone components are shifted and transferred to fixing location at structure in accordance with job safety requirements. 3.4. Base components are prepared for placement by drilling holes for dowels where applicable, and placement of wedges or packers for adjustment. 3.5. Initial stone is manoeuvred, placed and adjusted in position to be fixed level, to line and plumb. 3.6. Base course of stone components are placed and fixed to lines, level, aligned on face and plumb to specifications with location of each stone component to align and tie components together, adjusted and secured to specifications. 3.7. Corners of stone facade are joined and fixed to designed junction, to specifications. 3.8. Stone facade is installed using appropriate ***fixing methods*** to engineer's specifications. 3.9. Shifting gear/rigging equipment is removed from stone facade upon engineer's or site authority's approval of fixing. 3.10. Stone facade is caulked, sealed and flashed in accordance with job drawings and engineer's specifications.
4. Clean up.	4.1. Area is cleaned to specification. 4.2. Waste material is removed and placed into job waste bins. 4.3. Tools and equipment are cleaned, inspected, maintained and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

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REQUIRED SKILLS AND KNOWLEDGE

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret drawings and specifications
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply measurements and calculations
- planning and organisational skills to identify requirements, apply relevant resources and sequence tasks
- problem solving skills to recognise and take action to rectify minor faults and problems
- teamwork skills to be able to work with others to action tasks and relate to people from a range of cultural, social, ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

- Building Code of Australia (BCA) and AS3850 Tilt up concrete construction
- interpretation of drawings and specifications
- job safety analysis (JSA) and safe work method statements
- measuring, levelling and calculation techniques for stonemasonry work
- methods of fixing stone to structures
- safe use of scaffolding
- types and safe use of lifting equipment
- types of stone and their characteristics
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to set and anchor a stone facade to at least one of the structural types listed in the range statement, providing evidence of the ability to:

- comply with OHS regulations applicable to workplace operations
- comply with organisational policies and procedures
- select and use appropriate processes, tools and equipment to carry out tasks
- apply organisational quality procedures and processes within the context of setting and anchoring stone facades
- demonstrate sound techniques in dressing hard and soft stone
- select stone consistent with specification for material and colour
- accurately set out and install fixing brackets
- demonstrate safe handling practices in moving and placing stone
- fix stone to position and structure
- fix stone to line, level and plumb with clamps securing components
- identify typical faults and problems that occur and action required to rectify them
- communicate with others to ensure safe and effective workplace operations
- complete stone facade to specification.

Context of and specific resources

This competency is to be assessed using standard

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EVIDENCE GUIDE

for assessment

and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- work location for installation of stone
- tools, plant and equipment appropriate to installation processes
- construction materials relevant to proposed activity
- appropriate documentation relevant to task.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm a reasonable inference that competency is not only verified under the particular assessment circumstance, but is able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected

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must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to handling stone
- relevant Australian standards

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RANGE STATEMENT

	• safe work procedures relating to handling stone • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • restricted access barriers
	  • traffic control
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Hazards include:	• barricades • dust • excessive noise nearby • obstructions to clear access for supply • other work personnel • power leads

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RANGE STATEMENT

	• wind.
Tools and equipment include:	• air compressor and hoses • chalk lines • clogging tools • hammers • lifting gear and equipment • masonry chisels • measuring tapes and rules • power drills, including impact • power grinders • power leads • rollers • rubber mallets • scaffolding • screw cramp and wedges • spirit levels • squares • string lines.
Quality requirements include relevant regulations, including:	• internal company quality policy and standards • manufacturer specifications • AS3850 Tilt up concrete construction • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Statutory and regulatory authority includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Structure types include:	• brick/concrete masonry walls • in situ reinforced concrete • pre-cast reinforced concrete • structural steel frame.

Fixing methods include:	• chemical masonry anchor
	• mechanical masonry anchor
	• metal bracket for connection to steel frame
	• supporting and tying stone components together:
	  • S hook
	  • back cramp

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RANGE STATEMENT

- corbel plate bracket
- dog cramp
- fish tailed cramp
- pin bracket
- slotted bracket
- turned end cramp.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCST3015A Apply gilding to stone

Modification History

New unit based on superseded unit BCG3083A Apply gilding to stone
This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.
Not equivalent to superseded BCG unit

Unit Descriptor

This unit of competency specifies the outcomes required to apply gilding to lettering or shapes carved into stone surfaces. It may include working with others and in a team.

Application of the Unit

This unit of competency applies to stonemasons who inlay gold into stone.

Licensing/Regulatory Information

Check with relevant state and territory licensing and regulatory authorities. State and territory jurisdictions may have different regulatory requirements for work carried out on heritage structures.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes.
		1.2	***Work health and safety (WHS) requirements*** are followed according to safety plans and policies.
		1.3	***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and faults are rectified and reported before work begins.
		1.4	***Gilding materials*** product range is assessed and materials are selected according to job specifications and ***quality requirements***.
		1.5	***Environmental requirements*** are identified for the project according to environmental plans and ***statutory and regulatory authority*** requirements.
2	Apply surface gilding to lettering or shapes on stone surfaces.	2.1	Stone surface, with pre-cut lettering or shapes, is prepared for gilding according to job specifications and workplace procedures.
		2.2	Size and specified colour are mixed and applied to stone surface according to job specifications, ensuring size is contained within lettering or shape areas.
		2.3	Potential material shrinkage is determined and gilding material is cut to required size and shape according to job specifications.

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		2.4	Sized stone surface is checked for stickiness and gilding material is applied according to workplace procedures.
		2.5	Excess gilding material is trimmed and removed at edges of lettering or shapes according to job specifications.
		2.6	Gilding material is burnished to ensure loose particles are removed.
		2.7	Cleaning procedure and materials are selected and applied to clean gilded letters and shapes and surrounding surface according to job specifications.
3	Clean up.	3.1	Waste and unwanted material are disposed of safely according to workplace requirements.
		3.2	Re-usable and recyclable materials are salvaged and stored according to workplace requirements.
		3.3	Tools and equipment are cleaned, maintained and stored according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - enable clear and direct communication
  - use questioning to identify and confirm requirements
  - share information
  - follow instructions
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply measurements and calculate material requirements
- planning and organising skills to identify requirements, apply relevant resources and sequence tasks
- problem-solving skills to recognise and take action to rectify minor faults and problems
- reading skills to read and interpret drawings and specifications
- teamwork skills to work with others to action tasks

Required knowledge

- drawing conventions and construction terminology used in plans and specifications
- finishing techniques for gilding and gilded surfaces
- gilding materials suitable for application to letters and shapes cut into stone, and their characteristics
- job safety analyses (JSA) and safe work method statements (SWMS)
- methods for applying gilding to stone
- types of stone and their characteristics
- workplace and equipment safety requirements that apply to the use of gilding tools and equipment

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to apply gilding to at least three different types of lettering, insignia and monograms, providing evidence of the ability to:

- select and use appropriate tools, equipment and processes consistent with requirements of activity
- comply with WHS requirements applicable to workplace operations
- apply organisational quality procedures and processes within the context of applying gilding to stone
- provide appropriate protection to surrounding areas
- use safe and effective procedures to apply gilding recesses in stone
- apply gilding and finish surface to specifications
- communicate with others to ensure safe and effective workplace operations.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment may include:

- workplace location
- tools and equipment appropriate to gilding processes
- stone relevant to proposed activity
- drawings, specifications and documentation relevant to activity.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using one or more of the following methods:

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- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function, for example:

- CPCCST3010A Set out and cut letters in stone
- CPCCST3018A Inlay lead to stone.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information may include:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- memos
- regulatory and legislative requirements for handling stone
- current Australian standards relating to the application of gilding to stone
- safe work procedures relating to handling stone
- safety data sheets (SDS)
- signage
- verbal, written and graphical instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

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Planning and preparation may include:

- assessing conditions and hazards
- determining work requirements and safety plans and policies
- identifying equipment defects
- inspecting work sites.

Work health and safety requirements must comply with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures
- hazard control
- hazardous materials and substances
- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including operational risk assessment and treatments associated with:
  - concealed services (water, power and gas)
  - lighting
  - restricted access barriers
  - traffic control
  - working at heights
  - work site visitors and the public
  - working in proximity to others
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Tools and equipment may include:

- clamps
- cotton wool or velvet
- gelatine
- hammers
- gilding tools, including:
  - pad
  - knife
  - mop
  - mug
  - tip
  - heating pot
  - stove
- lettering chisels
- mallets
- masonry drills
- measuring tapes and rules
- pneumatic lettering chisels
- power grinders

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- power leads
- punches
- scribers
- sculptor's chisels
- squares
- straight edges.

Gilding materials may include:

- loose leaf metals, such as:
  - gold
  - silver
  - aluminium
  - Dutch metal
  - copper
  - variegated leaf
  - water-based size.

Quality requirements may include:

- attention to specifications of work
- control of handling procedures
- finishing of stone surfaces
- quality of materials
- relevant regulations, including:
  - Australian standards
  - internal organisational quality policy and standards
  - manufacturer specifications where specified
  - workplace operations and procedures.

Environmental requirements may include:

- clean-up management
- dust and noise control
- vibration management
- waste management.

Statutory and regulatory authority includes:

- federal, state and local authorities administering applicable Acts, regulations and codes of practice.

Unit Sector(s)

Construction

Custom Content Section

Not applicable.

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CPCCST3016A Build solid stonemasonry walls

Modification History

New unit based on superseded unit BCF3059A Cavity and solid construction
This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.
Not equivalent to superseded BCF unit

Unit Descriptor

This unit of competency specifies the outcomes required to construct solid stone walls, including installing door and window frames, lintels, sills and other specified requirements such as damp-proofing.

Application of the Unit

This unit of competency supports the work of stonemasons who build solid stone walls of various types according to detailed job drawings and specifications. The work may be completed individually or in a team.

Licensing/Regulatory Information

Check with relevant state and territory licensing and regulatory authorities. State and territory jurisdictions may have different regulatory requirements for work carried out on heritage structures.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes.
		1.2	***Work health and safety (WHS) requirements*** are followed according to safety plans and policies.
		1.3	Signage and barricade requirements are identified and implemented.
		1.4	***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and faults are rectified and reported before work begins.
		1.5	Material quantity requirements are identified and calculated according to plans, specifications and ***quality requirements***.
		1.6	***Materials*** appropriate to the work application are obtained, prepared, safely handled and located ready for use.
		1.7	***Environmental requirements*** are identified for the project according to environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
		1.8	Scaffolding is erected as required according to job requirements, WHS regulations and relevant standards.

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2	Set out stonework for walls.	2.1	Location and structural details of required stonework are determined from drawings and specifications.
		2.2	Datum or level line is established according to job drawings and specifications.
		2.3	Base stonework, below floor construction, is set out according to job drawings and specifications.
		2.4	Load bearing stonework and piers are set out according to job drawings and specifications.
		2.5	Stone walls are set out according to job drawings and specifications.
3	Construct base stonework for walls.	3.1	Mortar is mixed according to specifications and relevant standards.
		3.2	Base stones are laid to set out, and constructed according to specifications and relevant standards.
4	Construct solid stone walls.	4.1	Stonework gauge is determined and set out using gauging rod to confirm correct course height.
		4.2	Solid walls are constructed straight and true in plumb, line and level within set tolerance, according to job drawings and specifications and relevant standards.
		4.3	Damp-proof courses are built in according to job drawings and specifications and relevant standards.
		4.4	Openings are constructed and flashing installed according to job drawings and specifications.
		4.5	Lintels are installed according to job drawings and specifications.
		4.6	Expansion joints are formed according to locations specified on job drawings and requirements of relevant standards.
		4.7	Weepholes, reinforcing, vermin proofing and wall flashings are built in, where required, according to job drawings and specifications.

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		4.8	Sills are cut where required and laid to line according to job drawings and specifications.
5	Position door and window frames in walls.	5.1	Windows are located and built into walls according to job drawings and specifications and protected from mortar droppings during construction.
		5.2	Door jambs are located, built in and fixed to walls according to job drawings and specifications.
6	Finish stonework.	6.1	Joints to laid stonework are raked or ruled to correct depth according to job specifications.
		6.2	Stonework is brushed down prior to drying using appropriate brushing tool.
7	Clean up.	7.1	Work area is cleared according to job requirements and specifications.
		7.2	Tools and equipment are cleaned, maintained and stored.
		7.3	Working platform or scaffolding is dismantled according to WHS regulations and relevant standards.
		7.4	Unused materials are stored and waste material removed and disposed of according to environmental and workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - enable clear and direct communication
  - use questioning to identify and confirm requirements
  - share information
  - follow instructions
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply measurements when setting out and calculating material requirements
- planning and organising skills to identify requirements, apply relevant resources and sequence tasks
- problem-solving skills to recognise and take action to rectify minor faults and problems
- reading skills to read and interpret drawings and specifications
- self-management skills to work safely, including safely handling materials
- teamwork skills to work with others to action tasks
- technical skills to:
  - erect scaffolding
  - identify and select materials specific to requirements
  - select and use appropriate plant, equipment, hand and power tools

Required knowledge

- Australian standards as they relate to the construction of stonemasonry walls, including:
  - AS1316 Masonry cement
  - AS1684 National Timber Framing Code
  - AS2699 Wall ties for masonry construction
  - AS2904 Damp-proof courses and flashings
  - AS3700 Masonry structures
- mortar mix composition for different types of stone
- National Construction Code as it applies to the construction of stonemasonry walls
- procedures for the safe use of scaffolding
- processes for measuring, levelling and calculations

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- range and application of mortar additives
- safe operation of tools, plant and equipment relevant to stonemasonry walls
- types and characteristics of stone
- types and safe operation of relevant lifting equipment
- workplace and equipment safety requirements, including relevant statutory regulations, codes and standards
- worksite communication protocols

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or simulated workplace setting. Assessment shall be while tasks are undertaken either individually or as part of a team under limited supervision.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to select and use the appropriate materials, tools and equipment to set out and lay a solid stonemasonry wall with one corner and one opening containing a window or door with flashing over the openings. This solid stonemasonry structure must:

- be a minimum of 6 metres in total length
- be a minimum of 1.7 metres high
- include a brick sill that is a minimum of 600 mm wide
- incorporate base masonry work, including bearer piers and one stopped end.

The candidate must also provide evidence of:

- applying organisational quality procedures and processes within the context of cavity and solid construction
- applying safe handling practices when moving and placing stone
- complying with WHS regulations applicable to workplace operations
- complying with organisational policies and procedures
- establishing and maintaining cavity between external and internal stone walls
- identifying typical faults and problems that occur and taking necessary action to rectify them
- communicating with others to ensure safe and effective workplace operations
- giving particular attention to fixing stone to position and structure
- using safe and effective procedures to lay a stone wall to alignment and plumb
- selecting and using appropriate processes, tools and equipment to carry out tasks
- selecting stone consistent with specification for material and colour
- fixing stone to line, level and plumb.

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Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment may include:

- construction materials relevant to proposed activity
- documentation relevant to task
- tools, plant and equipment appropriate to installation processes
- work location for stone construction activity.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using one or more of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in

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the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information may include:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- memos
- regulatory and legislative requirements
- current Australian standards relating to building solid stonemasonry walls
- safe work procedures
- safety data sheets (SDS)
- signage
- verbal, written and graphical instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Planning and preparation may include:

- assessing conditions and hazards
- determining work requirements and safety plans and policies
- identifying equipment defects
- inspecting work sites.

Work health and safety requirements must comply with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures
- hazard control
- hazardous materials and substances
- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including operational risk assessment and treatments associated with:
  - concealed services (water, power and gas)
  - lighting
  - restricted access barriers
  - traffic control
  - working at heights
  - work site visitors and the public
  - working in proximity to others
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Tools and equipment may include:

- air compressor and hoses
- chalk line

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- concrete mixer
- elevated work platforms (EWPs)
- gin poles
- hammers
- jointing tools
- material hoists
- measuring rules or tapes
- mortar boards
- power drills, including impact
- power grinders
- power leads
- rollers
- rubber mallets
- scaffolding
- screw cramp and wedges
- shear legs
- shovels
- spanners
- spirit levels
- squares
- string lines
- trowels.

Quality requirements may include:

- attention to specifications of work
- control of handling procedures
- finishing of stone surfaces
- quality of materials
- relevant regulations, including:
  - Australian standards
  - internal organisational quality policy and standards
  - manufacturer specifications where specified
  - workplace operations and procedures.

Materials:

- may include:
  - cultured artificial stone
  - Hebel
  - limestone
  - sandstone
- may be:
  - regular
  - random regular
  - coursed
  - uncoursed.

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Environmental requirements may include:	• clean-up management • dust and noise control • vibration management • waste management.
Statutory and regulatory authority includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.

Unit Sector(s)

Construction

Custom Content Section

Not applicable.

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CPCCST3017A Construct stone arches

Modification History

New unit based on superseded unit BCG3056A Construct stone arches
This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.
Not equivalent to superseded BCG unit

Unit Descriptor

This unit of competency specifies the outcomes required to build stonemasonry arches of different types, using regular and irregular stone, and according to detailed job drawings and specifications.

Application of the Unit

This unit of competency supports the work of stonemasons who build internal or external stonemasonry arches, working individually or in a team.

Licensing/Regulatory Information

Check with relevant state and territory licensing and regulatory authorities. State and territory jurisdictions may have different regulatory requirements for work carried out on heritage structures.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare for work.	1.1	Work instructions are obtained from relevant ***information***, confirmed and applied to ***planning and preparation***.
		1.2	***Work health and safety (WHS) requirements*** are followed according to safety plans and policies.
		1.3	Signage and barricade requirements are identified and implemented.
		1.4	Plant, ***tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and faults are rectified and reported before work begins.
		1.5	Material quantity requirements are identified and calculated according to plans, specifications and ***quality requirements***.
		1.6	***Materials*** appropriate to the work application are obtained, prepared, safely handled and located ready for use.
		1.7	***Environmental requirements*** are identified for the project according to environmental plans and ***statutory and regulatory authority*** obligations.
		1.8	Scaffolding is erected according to job and WHS requirements.

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2	Set out and prepare arch work.	2.1	Location of ***arch*** is set out on base or footing for stone construction according to job drawings and specifications.
		2.2	Wall or columns are constructed according to job drawings and specifications up to level of springing line of arch.
		2.3	Supports are designed and constructed for ease of release without jarring stonework.
		2.4	Arch centring is raised according to specified height, located level across springing line and crown, and supported according to workplace requirements.
3	Construct arch with regularly cut stone.	3.1	Stones are cut according to job drawings and specifications.
		3.2	Pre-cut stones are checked for conformity with job specifications.
		3.3	Mortar is mixed according to job specifications and relevant standards as required.
		3.4	Central keystone is established and stones are laid to form arch according to job drawings and specifications.
		3.5	Regular stone is laid to form courses, and bond is maintained according to job drawings and specifications.
		3.6	Stones are cut, or pre-cut stones are used, to complete courses and abut arch stones.
		3.7	***Joints*** are made within specified tolerance while maintaining alignment and plumb of stone face.
4	Construct arch with irregular voussoirs forming stepped extrados.	4.1	Voussoirs/wedge stones that are delivered pre-cut are checked for conformity to design and order.
		4.2	Keystone of archway is positioned centrally and designed voussoirs are laid around centre to form arch.
		4.3	Regular stones are laid where voussoirs are designed to correspond with courses.

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		4.4	Random regular stones are laid where voussoirs are not designed for regular gauged courses.
5	Construct arch with irregular stones.	5.1	Stones are pre-cut, or set out and cut, to suit shape of designed arch.
		5.2	Keystones are laid at crown and other arch stones are laid over centre to form arch to specifications.
		5.3	Wall is constructed of random rubble or random squared ashlar to match curved extrados according to arch specifications.
		5.4	Joints are made with mortar, with stones selected and matched close to abutting stones, and bond strength is maintained.
		5.5	Joints are made to specifications with wall maintained in alignment and plumb.
		5.6	Mortar joints are struck and finished according to specifications for finish.
6	Clean up.	6.1	Stonework is cleaned, area cleared of waste, and materials and equipment are removed.
		6.2	Waste and unwanted materials are disposed of safely.
		6.3	Unused materials are stored or stacked.
		6.4	Tools and equipment are cleaned, maintained and stored.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - enable clear and direct communication
  - use questioning to identify and confirm requirements
  - share information
  - follow instructions
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply measurements and calculate material requirements and mortar mixture
- planning and organising skills to identify requirements, apply relevant resources and sequence tasks
- problem-solving skills to recognise and take action to rectify minor faults and problems
- reading skills to read and interpret drawings and specifications
- self-management skills to work safely, including safely handling materials
- teamwork skills to work with others to action tasks
- technical skills to:
  - erect scaffolding
  - identify and select materials specific to requirements
  - select and use appropriate plant, equipment, hand and power tools

Required knowledge

- arch design and construction principles
- Australian standards as they relate to the construction of stonemasonry arches, including:
  - AS1316 Masonry cement
  - AS2699 Wall ties for masonry construction
  - AS3700 Masonry structures
- methods for constructing stonemasonry arches
- mortar mix composition for different types of stone
- National Construction Code as it applies to the construction of stonemasonry arches
- procedures for measuring, levelling and calculating
- procedures for the safe use of scaffolding

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- range and application of mortar additives
- safe operation of tools, plant and equipment relating to arch construction
- types and characteristics of stone
- types and safe operation of relevant lifting equipment
- workplace and equipment safety requirements, including relevant statutory regulations, codes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or simulated workplace setting. Assessment shall be while tasks are undertaken either individually or as part of a team under limited supervision.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to build two different types of stone arches and provide evidence of:

- complying with work health and safety requirements applicable to workplace operations
- complying with organisational policies and procedures
- selecting and using tools and equipment to carry out arch construction process
- applying organisational quality procedures and processes within the context of constructing stone arches to walls or columns
- adopting and using safe and effective procedures to set out and set up arch centre to specification
- giving particular attention to support of centre and method of lowering when arch is complete
- identifying and, where applicable, marking each cut stone for arch location
- using safe and effective procedures to handle and place each stone
- forming arch to specification and, where applicable, applying mortar to joints
- identifying typical faults and problems that occur and taking necessary action to rectify them
- communicating with others to ensure safe and effective workplace operations
- completing arch construction, including finish to specifications.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

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Resource implications for assessment may include:

- drawings and specifications relevant to proposed activity
- hand and power tools, plant and equipment appropriate to construction processes
- materials relevant to proposed activity
- scaffolding appropriate to construction processes
- site location for proposed activity.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using one or more of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information may include:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- memos

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- regulatory and legislative requirements
- current Australian standards relating to the construction of stone arches
- plans and specifications
- quality requirements
- safe work procedures
- safety data sheets (SDS)
- signage
- verbal, written and graphical instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Planning and preparation may include:

- assessing conditions and hazards
- determining work requirements and safety plans and policies
- identifying equipment defects
- inspecting work sites.

Work health and safety requirements must comply with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures
- hazard control
- hazardous materials and substances
- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including operational risk assessment and treatments associated with:
  - concealed services (water, power and gas)
  - lighting
  - restricted access barriers
  - traffic control
  - working at heights
  - work site visitors and the public
  - working in proximity to others
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Tools and equipment may include:

- chisels
- concrete mixers
- gin poles
- hammers
- hand saws
- masonry saws
- measuring tapes and rules

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- mortar boards
- power leads
- power saws
- shear legs
- shovels
- spirit levels
- squares
- straight edges
- string lines
- trowels.

Quality requirements may include:

- attention to specifications of work
- control of handling procedures
- finishing of stone surfaces
- quality of materials
- relevant regulations, including:
  - Australian standards
  - internal organisational quality policy and standards
  - manufacturer specifications where specified
  - workplace operations and procedures.

Materials for arches:

- may include:
  - granite
  - limestone
  - marble
  - sandstone
- may be:
  - ashlar
  - pre-cut stones
  - regular
  - random regular
  - coursed
  - uncoursed.

Environmental requirements may include:

- clean-up management
- dust and noise control
- vibration management
- waste management.

Statutory and regulatory authority includes:

- federal, state and local authorities administering applicable Acts, regulations and codes of practice.

Arches may be designed for walls of:

- regular gauge
- random regular
- random rubble.

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Joints in stone arches may be:

- cement mortar
- dry.

Unit Sector(s)

Construction

Custom Content Section

Not applicable.

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CPCCST3018A Inlay lead to stone

Modification History

New unit based on superseded unit CPCCST3008A
This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.
Not equivalent to CPCCST3008A Inlay lead to stone

Unit Descriptor

This unit of competency specifies the outcomes required to inlay lead to lettering or shapes carved into stone surfaces. The unit may include working with others and in a team.

Application of the Unit

This unit of competency applies to stonemasons who inlay solid lead into stone.

Licensing/Regulatory Information

Check with relevant state and territory licensing and regulatory authorities. State and territory jurisdictions may have different regulatory requirements for work carried out on heritage structures.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes.
		1.2	***Work health and safety (WHS) requirements*** are followed according to safety plans and policies.
		1.3	***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and faults are rectified and reported before work begins.
		1.4	Material quantity requirements are identified and calculated according to plans, specifications and ***quality requirements***.
		1.5	Materials appropriate to the work application are obtained, prepared, safely handled and located ready for use.
		1.6	***Environmental requirements*** are identified for the project according to environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2	Perform lead inlay process on lettering of stone surfaces.	2.1	Lead is prepared and handled safely, in suitably ventilated area and according to WHS requirements.
		2.2	Lead strips are cut to suit incised letters and beaten into cavities according to job and WHS requirements.
		2.3	Lead is rasped and rubbed to a raised or flat finish with stone surface according to job and WHS specifications.

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		2.4	Letters or insignias are finished with clean edges and surface is finished according to job specifications.
3	Clean up.	3.1	Waste and unwanted material are disposed of safely according to workplace and legislative requirements.
		3.2	Re-usable and recyclable materials are salvaged and stored according to workplace requirements.
		3.3	Tools and equipment are cleaned, maintained and stored according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - enable clear and direct communication
  - use questioning to identify and confirm requirements
  - share information
  - follow instructions
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply measurements and calculate material requirements
- planning and organising skills to identify requirements, apply relevant resources and sequence tasks
- problem-solving skills to recognise and take action to rectify minor faults and problems
- reading skills to:
  - identify letters in order to check spelling
  - read and interpret drawings and specifications
- teamwork skills to work with others to action tasks

Required knowledge

- drawing conventions and construction terminology used in plans and specifications
- effect of lead on humans and related safety precautions
- job safety analyses (JSA) and safe work method statements (SWMS)
- methods of inlaying lead to stone
- types of stone and their characteristics
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to inlay at least three different types of lettering, insignia and monograms using solid lead, providing evidence of the ability to:

- select and use appropriate tools, equipment and processes consistent with requirements of inlaying lead to lettering or shapes on stone surfaces
- comply with WHS requirements applicable to workplace operations
- apply organisational quality procedures and processes within context of inlaying lead to stone
- use safe and effective procedures to inlay lead to recesses cut into stone
- complete inlaying of lead and finishing of surface to specifications
- communicate with others to ensure safe and effective workplace operations.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment may include:

- workplace location
- tools and equipment appropriate to inlaying processes
- stone with pre-cut lettering or patterns relevant to proposed activity
- drawings, specifications and documentation relevant to activity.

Method of assessment

Assessment for this unit must verify the practical application of

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the required skills and knowledge, using one or more of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function, for example:

- CPCCST3010A Set out and cut letters in stone
- CPCCST3015A Apply gilding to stone.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance**.** ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information may include:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- memos
- regulatory and legislative requirements for handling lead and stone
- current Australian standards relating to inlaying solid lead into stone
- safe work procedures relating to handling lead and stone
- safety data sheets (SDS)
- signage
- verbal, written and graphical instructions, including

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manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Planning and preparation may include:
- assessing conditions and hazards
- determining work requirements and safety plans and policies
- identifying equipment defects
- inspecting work sites.

Work health and safety requirements must comply with state and territory legislation and regulations and project safety plan and may include:
- emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures
- hazard control
- handling and disposal of hazardous materials and substances, especially lead
- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including operational risk assessment and treatments associated with:
  - concealed services (water, power and gas)
  - lighting
  - restricted access barriers
  - traffic control
  - working at heights
  - work site visitors and the public
  - working in proximity to others
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Tools and equipment may include:
- clamps
- cotton wool or velvet
- gelatine
- hammers
- lettering chisels
- mallets
- masonry drills
- measuring tapes and rules
- pneumatic lettering chisels
- power grinders
- power leads
- punches
- scribers
- sculptor’s chisels
- squares

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Quality requirements may include:	• straight edges.
	• attention to specifications of work
	• control of handling procedures
	• finishing of stone surfaces
	• quality of materials
	• relevant regulations, including:
	  • Australian standards
	  • internal organisational quality policy and standards
	  • manufacturer specifications where specified
	  • workplace operations and procedures.

Environmental requirements may include:	• clean-up management • dust and noise control • vibration management • waste management.
Statutory and regulatory authority includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.

Unit Sector(s)

Construction

Custom Content Section

Not applicable.

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CPCCST3019A Lay stonemasonry stairs

Modification History

New unit based on superseded unit BCF3027A Lay stair and floor surfaces
This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.
Not equivalent to superseded BCF unit

Unit Descriptor

This unit of competency specifies the outcomes required to build stonemasonry stairs, internally or externally, according to detailed job drawings and specifications.

Application of the Unit

This unit of competency supports the work of stonemasons who construct stonemasonry stairs in houses and gardens, working either individually or in a team.

Licensing/Regulatory Information

Check with relevant state and territory licensing and regulatory authorities. State and territory jurisdictions may have different regulatory requirements for work carried out on heritage structures.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare work.	1.1	Work instructions are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes.
		1.2	***Work health and safety (WHS) requirements*** are followed according to safety plans and policies.
		1.3	Signage and barricade requirements are identified and implemented.
		1.4	***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and faults are rectified and reported before work begins.
		1.5	Material quantity requirements are identified and calculated according to plans, specifications and ***quality requirements***.
		1.6	***Materials*** appropriate to the work application are obtained, prepared, safely handled and located ready for use.
		1.7	***Environmental requirements*** are identified for the project according to environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
		1.8	Location of ***steps or stairs*** is identified from job drawings and specifications.

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2	Set out steps or stairs.	2.1	Rise and going dimensions for each step are identified from job drawings and specifications or calculated according to relevant codes and standards.
		2.2	Position locations for faces to treads and risers are set out according to dimensions identified or calculated for rise and going of steps.
		2.3	Face location of profile of steps or stairs is set out according to job drawings and specifications.
3	Lay stone steps or stairs.	3.1	Stones are selected for variance in shape to suit abutting blocks according to job drawings and specifications.
		3.2	Starting point for steps of stairs is determined and first stone is selected.
		3.3	First stone is individually bedded to finish level to proposed floor level according to job drawings and specifications.
		3.4	Stones for each step are selected and individually bedded with close joints according to specified finish level.
		3.5	Final bedding is carried out by adding additional sand where required and compacting according to job specifications.
		3.6	Profile of steps or stairs is faced where applicable with like stone according to designed pattern and is checked to confirm that it is straight and plumb according to job specifications.
4	Clean up.	4.1	Work area is cleared according to job requirements and specifications.
		4.2	Tools and equipment are cleaned, maintained and stored.
		4.3	Unused materials are stored and waste material removed and disposed of according to environmental and workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - enable clear and direct communication
  - use questioning to identify and confirm requirements
  - share information
  - follow instructions
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply measurements and calculate material requirements
- planning and organising skills to identify requirements, apply relevant resources and sequence tasks
- problem-solving skills to recognise and take action to rectify minor faults and problems
- reading skills to read and interpret drawings and specifications
- self-management skills to work safely, including safely handling materials
- teamwork skills to work with others to action tasks
- technical skills to:
  - identify and select materials specific to requirements
  - select and use appropriate plant, equipment, hand and power tools

Required knowledge

- Australian standards as they relate to the construction of stonemasonry steps or stairs, including:
  - AS1316 Masonry cement
  - AS3700 Masonry structures
- mortar mix composition for different types of stone
- National Construction Code as it applies to the construction of stonemasonry steps or stairs
- range and application of mortar additives
- safe operation of relevant tools, plant and equipment
- types and characteristics of stone
- types and safe operation of relevant lifting equipment
- types of designs for steps and stairs
- workplace and equipment safety requirements, including relevant statutory regulations,

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codes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or simulated workplace setting.

Assessment shall be while tasks are undertaken either individually or as part of a team under limited supervision.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to set out and construct a stone staircase and provide evidence of:

- communicating with others to ensure safe and effective workplace operations
- complying with work health and safety requirements applicable to workplace operations
- complying with organisational policies and procedures
- selecting and using appropriate processes, tools and equipment
- applying organisational quality procedures and processes within context of laying and fixing stone
- selecting stone and mortar consistent with specification of job required
- marking out location of treads and risers accurately
- adopting safe and effective procedures and using them to handle and place stone
- identifying typical faults and problems that occur and taking necessary action to rectify them
- finishing steps or stairs and joints to specifications.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment may include:

- construction materials appropriate to construction of stone steps and stairs
- documentation relative to task
- tools, plant and equipment appropriate to installation processes

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- work location for construction of stone steps and stairs.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using one or more of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. **Bold italicised** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information may include:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- memos
- regulatory and legislative requirements
- current Australian standards relating to laying masonry stairs
- safe work procedures
- safety data sheets (SDS)
- signage
- verbal, written and graphical instructions, including manufacturer specifications and instructions where specified

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- work bulletins
- work schedules, plans and specifications.

Planning and preparation may include:

- assessing conditions and hazards
- determining work requirements and safety plans and policies
- identifying equipment defects
- inspecting work sites.

Work health and safety requirements must comply with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures
- hazard control
- hazardous materials and substances
- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including operational risk assessment and treatments associated with:
  - concealed services (water, power and gas)
  - lighting
  - restricted access barriers
  - traffic control
  - working at heights
  - work site visitors and the public
  - working in proximity to others
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Tools and equipment may include:

- brooms
- brushes
- concrete mixers
- jointing tools
- lifting clamps
- mallets
- masonry saws
- measuring tapes or rules
- mortar boards
- power leads
- rollers
- screed boards
- shovels
- spirit levels
- squares
- trowels
- wheelbarrows.

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Quality requirements may include:	• attention to specifications of work
	• control of handling procedures
	• finishing of stone surfaces
	• quality of materials
	• relevant regulations, including:
	  • Australian standards
	  • internal organisational quality policy and standards
	  • manufacturer specifications where specified
	  • workplace operations and procedures.

Materials used to renovate or restore stone may include:	• granite • locally available stone • marble • slate.
Environmental requirements may include:	• clean-up management • dust and noise control • vibration management • waste management.
Statutory and regulatory authority includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Steps and stairs may include:	• geometrical stairs • open flight • quarter and half space landings • solid treads • straight flight • veneer faced.

Unit Sector(s)

Construction

Custom Content Section

Not applicable.

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CPCCST3020A Produce reconstituted stone

Modification History

New unit based on superseded unit BCG3053A Produce reconstituted stone
This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.
Not equivalent to superseded BCG unit

Unit Descriptor

This unit of competency specifies the outcomes required to create or use specific moulds; and mix, pour and finish to detailed specifications to produce reconstituted stone products, such as terrazzo and epoxy-based stone repairs.

Application of the Unit

This unit of competency supports the work of stonemasons who create stone products using different types of concrete mixes. The work may be completed individually or in a team.

Licensing/Regulatory Information

Check with relevant state and territory licensing and regulatory authorities. State and territory jurisdictions may have different regulatory requirements for work carried out on heritage structures.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Select and prepare materials and equipment.	1.1	Work instructions are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes.
		1.2	***Work health and safety (WHS) requirements*** are followed according to safety plans and policies.
		1.3	***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and faults are rectified and reported before work begins.
		1.4	Material quantity requirements are identified and calculated according to plans, specifications and ***quality requirements***.
		1.5	***Materials*** appropriate to the work application are obtained, prepared, safely handled and located ready for use.
		1.6	***Environmental requirements*** are identified for the project according to environmental plans and ***statutory and regulatory authority requirements***.
2	Produce reconstituted stone.	2.1	Forms or moulds are constructed, or cleaned and prepared, according to job specifications ready for placement of aggregate mix.
		2.2	Aggregates are measured, proportioned and mixed according to job specifications.
		2.3	Mould is filled with mix and light vibration is applied to

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			consolidate material and eliminate voids.
		2.4	Level of filled mould is screeded to form a flat surface and cured according to job specifications.
		2.5	Reconstituted stone section is removed from mould, carefully handled and placed on table ready for grinding process.
		2.6	Surface of mould is ground thoroughly to expose aggregate and voids are filled evenly with matching colour cement mortar.
		2.7	Surface is polished to produce finish that is flat and free from blemish.
3	Clean up.	3.1	Area is cleared of waste material, dust and equipment according to workplace requirements.
		3.2	Unused materials are stored and waste materials disposed of according to environmental and workplace requirements.
		3.3	Tools and equipment are cleaned, maintained and stored.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - enable clear and direct communication
  - use questioning to identify and confirm requirements
  - share information
  - follow instructions
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply measurements and calculate material requirements
- planning and organising skills to identify requirements, apply relevant resources and sequence tasks
- problem-solving skills to recognise and take action to rectify minor faults and problems
- reading skills to read and interpret drawings and specifications
- teamwork skills to work with others to action tasks

Required knowledge

- materials used to produce reconstituted stone and their characteristics
- methods for placing, levelling and compacting concrete
- polishing and grinding processes
- proportion of materials for different mortar mixes
- procedures for safely handling of materials
- safe operating methods for plant, tools and equipment used for producing reconstituted stone
- types of formwork and moulds for concrete and how they are constructed, cleaned and prepared
- workplace and equipment safety requirements, including relevant statutory regulations, codes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by observation in the workplace or simulated workplace setting.

Assessment may be conducted while tasks are undertaken either individually or as part of a team under limited supervision.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to construct a terrazzo panel and repair terrazzo, marble or granite in situ, including the ability to:

- apply organisational quality procedures within the context of producing reconstituted stone
- select and use appropriate processes tools and equipment to produce reconstituted stone
- select stone materials consistent with job specification
- ensure accurate setting up of forms or moulds for placement of mix
- proportion materials according to specification for mix
- adopt and use safe and effective procedures to apply grinding and polishing processes
- complete produced stone to specifications for mix and finish
- comply with work health and safety regulations and requirements, including safe handling and placement procedures
- identify typical faults and problems that may occur when creating moulds, and taking necessary action to rectify them
- communicate with others to ensure safe and effective workplace operations.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment may include:

- drawings and specifications relevant to proposed tasks
- materials required for composition of proposed mix
- moulds or material for formwork appropriate to activities

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- tools, plant and equipment appropriate to the application processes
- work area suitable to tasks.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using one or more of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information may include:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- memos
- regulatory and legislative requirements
- current Australian standards relating to the production of reconstituted stone
- safe work procedures
- safety data sheets (SDS)

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- signage
- verbal, written and graphical instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Planning and preparation may include:

- assessing conditions and hazards
- determining work requirements and safety plans and policies
- identifying equipment defects
- inspecting work sites.

Work health and safety requirements must comply with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures
- hazard control
- hazardous materials and substances
- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including operational risk assessment and treatments associated with:
  - concealed services (water, power and gas)
  - lighting
  - restricted access barriers
  - traffic control
  - working at heights
  - work site visitors and the public
  - working in proximity to others
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Tools and equipment may include:

- concrete mixers
- floats
- forklifts
- gantry cranes
- grinding machines
- hammers
- measuring tapes and rules
- polishing machines
- screed boards
- shovels
- spirit levels
- wheelbarrows.

Quality requirements

- attention to specifications of work
- control of handling procedures

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may include:	• finishing of stone surfaces
	• quality of materials
	• relevant regulations, including:
	  • Australian standards
	  • internal organisational quality policy and standards
	  • manufacturer specifications where specified
	  • workplace operations and procedures.

Materials used in the production of reconstituted stone may include:	• basalt (bluestone) • coloured cement • igneous rocks • river gravel • sand.
Environmental requirements may include:	• clean-up management • dust and noise control • vibration management • waste management.
Statutory and regulatory authority includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.

Unit Sector(s)

Construction

Custom Content Section

Not applicable.

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CPCCST3021A Renovate and restore stone work

Modification History

New unit based on superseded unit BCG3050A Renovate and restore stone work
This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.
Not equivalent to superseded BCG unit

Unit Descriptor

This unit of competency specifies the outcomes required to remove damaged stonemasonry, replace it with matching stone, cut stone to fit, and fix it in place using the correct fixing methods for the structure and type of stone.

Application of the Unit

This unit of competency supports the work of stonemasons who undertake renovation and restoration of stonemasonry structures. The work may be completed individually or in a team.

Licensing/Regulatory Information

Check with relevant state and territory licensing and regulatory authorities. State and territory jurisdictions may have different regulatory requirements for work carried out on heritage structures.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare work.	1.1	Work instructions are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes.
		1.2	***Work health and safety (WHS) requirements*** are followed according to safety plans and policies.
		1.3	Signage and barricade requirements are identified and implemented.
		1.4	***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and faults are rectified and reported before work begins.
		1.5	Material quantity requirements are identified and calculated according to plans, specifications and ***quality requirements***.
		1.6	***Materials*** appropriate to the work application are obtained, prepared, safely handled and located ready for use.
		1.7	***Environmental requirements*** are identified for the project according to environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
		1.8	Working platform or scaffolding is erected according to WHS requirements.
		1.9	Lifting and lowering equipment is installed and tested according to WHS and workplace requirements.

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2	Assess damaged stone work.	2.1	Damaged section of stone is located, clearly identified, and confirmed with job drawings and specifications.
		2.2	Extent of damaged sections and overall dimensions of replacement stones required are correctly determined.
3	Remove damaged stone and prepare void.	3.1	Damaged section is accurately and safely cut out according to predetermined dimensions without damage to surrounding stone.
		3.2	Waste materials are safely lowered and removed from site according to job and WHS requirements.
		3.3	Characteristics of bedding planes are identified and size of replacement stone is matched to ensure structural integrity.
4	Prepare replacement stone.	4.1	Colour and type of existing stone are matched with specified and sourced replacement stone, and alternative stone is sourced or advice sought if match is not compliant.
		4.2	Dimensions and profile of replacement stone are determined and appropriate templates are made.
		4.3	Replacement stone is accurately worked to match dimensions and profile of removed stone.
5	Fix replacement stone.	5.1	Stone is drilled or slotted for dowels or brackets according to job specifications for fixing.
		5.2	Stone is correctly handled and raised into position for placement.
		5.3	Stone is placed, fixed and bedded in location with adhesive or mortar according to job specification.
		5.4	Vertical joints are filled with mortar or sealant, where applicable, according to job specifications.
		5.5	Stonework is cleaned using dry, liquid or chemical means according to type of stone laid and job specifications.

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6	Reproduce decorative carving work.	6.1	Templates of decorative stone carving are made to match the original carving according to job specifications.
		6.2	Stone is selected to match original according to job specifications.
		6.3	Prepared carving template is applied to stone and stone is marked to show areas to be removed according to workplace procedures.
		6.4	Bulk areas of waste stone are removed according to workplace procedures and job specifications.
		6.5	Template is re-applied, and stone is re-marked in preparation for carving of detail according to workplace requirements and job specifications.
		6.6	Detailed carving of stone is completed and inspected to ensure carving matches the original stone and amendments are made as required.
7	Clean up.	7.1	Area is cleared of waste material and equipment according to workplace requirements.
		7.2	Unused materials are stored and waste materials disposed of according to environmental and workplace requirements.
		7.3	Tools and equipment are cleaned, maintained and stored.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - enable clear and direct communication
  - use questioning to identify and confirm requirements
  - share information
  - follow instructions
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply measurements and calculate material requirements
- planning and organising skills to identify requirements, apply relevant resources and sequence tasks
- problem-solving skills to recognise and take action to rectify minor faults and problems
- reading skills to read and interpret drawings and specifications
- self-management skills to work safely, including safely handling materials
- teamwork skills to work with others to action tasks
- technical skills to:
  - erect scaffolding
  - identify and select materials specific to requirements
  - select and use appropriate plant, equipment, hand and power tools

Required knowledge

- codes and standards applicable to replacing stone, including:
  - AS3700 Masonry in buildings
  - National Construction Code
- methods for:
  - fixing stone
  - preparing exposed areas of existing stonework for replacement stone
- mortar mix compositions required for different types of stonework
- principles and procedures to conserve Australian heritage places according to the Burra Charter
- range of mortar additives and their applications, including plasticisers
- range, production and use of templates for stonework

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- safe operation of plant, tools and equipment used in stonework
- techniques for measuring and levelling stone
- types and safe operation of lifting and lowering equipment
- types of stone used in renovation and restoration work and their characteristics
- workplace and equipment safety requirements, including relevant statutory regulations, codes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or simulated workplace setting. Assessment may be conducted while tasks are undertaken either individually or as part of a team under limited supervision.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- reproduce and replace stone, including at least three different types of moulds each a minimum of 15 centimetres in height and length
- reproduce a decorative carving, which may include elements of both flora and fauna and must be a minimum of 15 x 15 x 15 centimetres, for example a lion's head with floral decoration.

The candidate should also provide evidence of:

- accuracy in taking measurements and preparing templates for replacement stone
- adopting and using safe and effective procedures to remove damaged stone
- applying organisational quality procedures and processes within the context of renovating or restoring stonework
- completing renovation process to specifications
- complying with work health and safety requirements applicable to workplace operations
- complying with organisational policies and procedures
- applying the Burra Charter where appropriate in relation to historic stone structures
- identifying typical faults and problems that occur and taking necessary action to rectify them
- communicating with others to ensure safe and effective workplace operations
- selecting and using appropriate processes, tools and equipment
- selecting stone consistent with specification for material and colour
- using safe handling practices in moving and placing stone.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic

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and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment may include:

- work location for renovation activity
- tools, plant and equipment appropriate to renovation and replacement processes
- construction materials relevant to the activity
- documentation relevant to task
- scaffolding appropriate to location and activity.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using one or more of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate,

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accessibility of the item, and local industry and regional contexts) may also be included.

Information may include:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- memos
- regulatory and legislative requirements
- current Australian standards relating to renovating and restoring stone work
- safe work procedures
- safety data sheets (SDS)
- signage
- verbal, written and graphical instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Planning and preparation may include:

- assessing conditions and hazards
- determining work requirements and safety plans and policies
- identifying equipment defects
- inspecting work sites.

Work health and safety requirements must comply with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures
- hazard control
- hazardous materials and substances
- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including operational risk assessment and treatments associated with:
  - concealed services (water, power and gas)
  - lighting
  - restricted access barriers
  - traffic control
  - working at heights
  - work site visitors and the public
  - working at heights
  - working in proximity to others
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Tools and equipment may include:

- air compressor and hoses
- cranes
- elevated work platforms (EWPs)

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- forklifts
- gin poles
- hammers
- masonry chisels
- material hoists
- measuring rules or tapes
- power drills, including impact drills
- power grinders
- power leads
- rollers
- scaffolding
- shear legs
- spirit levels
- squares.

Quality requirements may include:

- attention to specifications of work
- control of handling procedures
- finishing of stone surfaces
- quality of materials
- relevant regulations, including:
  - Australian standards
  - internal organisational quality policy and standards
  - manufacturer specifications where specified
  - workplace operations and procedures.

Materials used to renovate or restore stone may include:

- basalt (bluestone)
- granite
- marble
- sandstone.

Environmental requirements may include:

- clean-up management
- dust and noise control
- vibration management
- waste management.

Statutory and regulatory authority includes:

- federal, state and local authorities administering applicable Acts, regulations and codes of practice.

Unit Sector(s)

Construction

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Custom Content Section

Not applicable.

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CPCCST3022A Carry out profile work

Modification History

This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

- Changes to application, performance criteria, required knowledge, and critical aspects for assessment
- Range of other minor editorial changes

Not equivalent to CPCCST3005A Carry out profile work

Unit Descriptor

This unit specifies the outcomes required to produce templates for profiling work and to set up and use profiling machinery and equipment to profile edges of stone accurately and according to job specifications.

Application of the Unit

This unit of competency supports the work of stonemasons who finish edges of stone by profiling, using hand and power tools. The work may be completed individually or in a team.

Licensing/Regulatory Information

Check with relevant state and territory licensing and regulatory authorities. State and territory jurisdictions may have different regulatory requirements for work carried out on heritage structures.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare.	1.1	Work instructions are obtained using relevant ***information***, confirmed and applied for planning and preparation purposes.
		1.2	***Work health and safety (WHS) requirements*** are followed according to safety plans and policies.
		1.3	***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and faults are rectified and reported before work begins.
		1.4	Material quantity requirements are identified and calculated according to plans, specifications and ***quality requirements***.
		1.5	Materials appropriate to the work application are obtained, prepared, safely handled and located ready for use.
		1.6	***Environmental requirements*** are identified for the project according to environmental plans and ***statutory and regulatory authority*** requirements, and are applied.
2	Transfer dimensions from an engineering drawing to work.	2.1	Stone is marked out for profile work requirements according to job specifications.
		2.2	Datum points are correctly established on stone for application of profile set-out.

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3	Develop patterns.	3.1	Dressing procedures are analysed and most appropriate development method is chosen and applied for ***type of stone***.
		3.2	Calculations are carried out and used to develop true shape of profile mould.
		3.3	Patterns are set out accurately for profile mould, reverse mould and bed mould to dimensions and specified shapes.
		3.4	Allowances for fabrication processes with guide/roller working off ***template*** are correctly determined and transferred to bed mould.
4	Use hand or hand-held power cutting tool.	4.1	Tool is adjusted for operation in consideration of application work.
		4.2	Hand tool or power cutting tool is used safely and correctly to cut patterns for templates.
		4.3	Materials are cut to size according to drawing and job requirements, minimising wastage.
		4.4	Templates are trimmed to set-out, where required, to specifications.
5	Shape and form stone.	5.1	Equipment is set up and adjusted to meet job requirements and standard operating procedures.
		5.2	Stone is located and fixed into place on table ready for machine operation.
		5.3	Appropriate cutter is set to machine to carry out initial cutting processes and cutters are changed as required during profiling process.
		5.4	Bed template is located and aligned with stone and machine operation to requirements of job and manufacturer specifications.
		5.5	Machine is set up and operated with allowances for thickness of template and gauges.
		5.6	Machine is operated and stone is shaped and formed to specifications, with material checked for accuracy

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			against required dimensions and shape.
6	Clean up.	6.1	Area is cleaned to specification.
		6.2	Waste material is removed and placed into job waste bins.
		6.3	Tools and equipment are cleaned, inspected, maintained and stored.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - follow instructions
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- numeracy skills to apply measurements and calculate material requirements
- planning and organising skills to identify requirements, apply relevant resources and sequence tasks
- problem-solving skills to recognise and take action to rectify minor faults and problems
- reading skills to read and interpret drawings and specifications
- teamwork skills to work with others to action tasks

Required knowledge

- drawing conventions and construction terminology used in plans and specifications
- job safety analyses (JSA) and safe work method statements
- measuring and marking techniques relating to stonemasonry work
- techniques for profiling stone
- types and uses of templates for stonemasonry work
- types of stone and their characteristics
- workplace and equipment safety requirements.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or simulated workplace setting. Assessment shall be while tasks are undertaken either individually or as part of a team under limited supervision.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to profile stone for three different job specifications , providing evidence of the ability to:

- comply with WHS requirements applicable to workplace operations
- comply with organisational policies and procedures
- select and use appropriate processes, tools and equipment to carry out tasks
- apply organisational quality procedures and processes within the context
- transfer critical dimensions and reference points to work accurately
- develop required patterns, accurate to job details
- accurately produce templates for job requirements
- apply correct procedures with use of templates to set up machines and equipment with stone to carry out machining processes
- adopt and use safe and effective procedures to cut and shape stone
- carry out safe and effective operations with use of equipment and machines
- complete profile work with accuracy of shape according to specifications
- identify typical faults and problems that occur and take necessary action to rectify them
- communicate with others to ensure safe and effective workplace operations.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

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Resource implications for assessment may include:

- construction materials relevant to proposed activity
- documentation relevant to task
- tools, plant and equipment appropriate to installation processes
- work location for stone construction activity.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using one or more of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information may include:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- memos
- regulatory and legislative requirements for handling stone
- current Australian standards relating to profiling stone
- safe work procedures relating to handling stone

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- safety data sheets (SDS)
- signage
- verbal, written and graphical instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Planning and preparation may include:

- assessing conditions and hazards
- determining work requirements and safety plans and policies
- identifying equipment defects
- inspecting work sites.

Work health and safety requirements must comply with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures
- hazard control
- hazardous materials and substances
- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including operational risk assessment and treatments associated with:
  - concealed services (water, power and gas)
  - lighting
  - restricted access barriers
  - traffic control
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Tools and equipment may include:

- carborundum cutters
- clamps
- cutting and grinding machines, including:
  - power grinders
  - portable machines
- diamond cutters
- dividers and wing compasses
- jigs
- measuring tapes and rules
- power leads
- scribers
- squares

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	• travelling arm saws.
Quality requirements may include:	• internal organisational quality policy and standards • manufacturer specifications • relevant regulations, including Australian standards • workplace operations and procedures.
Environmental requirements may include:	• clean-up management • dust and noise control • vibration management • waste management.
Statutory and regulatory authority includes:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.

Type of stone may include:	• igneous rock, including:
	  • basalt (blue stone)
	  • granite
	• marble
	• sandstone.

Template may be made of:	• aluminium sheet • cardboard • plastic sheet • plywood • zincalume sheet.

Unit Sector(s)

Construction

Custom Content Section

Not applicable.

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CPCCSV5001A Assess the construction of domestic scale buildings

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to assess the construction of domestic scale buildings and those of a similar loading, construction and size, such as small industrial, commercial or public buildings.

It includes evaluation and identification of appropriate construction methods, and identification of required standards and services according to relevant legislation, design and maintenance specifications.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to assess the construction of domestic scale buildings, including the demonstration of research, analysis, evaluation and reporting skills within the context of relevant legislation, the Building Code of Australia (BCA) and Australian standards.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Research for compliance with building and planning legislation.	1.1. Compliance with building and construction planning legislation is investigated, interpreted and communicated to others throughout design and construction of the building project for ***planning and preparation*** purposes. 1.2. Planning and construction effects of the BCA and construction requirements of relevant Australian standards are researched and documented following ***construction principles for domestic scale buildings***. 1.3. Effects of state or territory, local government and service supply authorities' legislation, including ***reporting systems*** on design and construction are researched and documented. 1.4. Methods of foundation assessment and classification are identified and evaluated. 1.5. Effects of the Disability Discrimination Act (DDA) regarding access for people with a disability are researched and documented.
2. Record all relevant planning and construction information.	2.1. Building planning and construction information is determined and recorded using appropriate industry terminology and symbols. 2.2. Salient features of a site, sufficient for the preparation of design and construction documents, are recorded on the plan.
3. Investigate and evaluate a site for establishment, preparation and excavation requirements.	3.1. Salient features of a building site and methods of soil investigation, assessment and clarification are appraised and recorded on documents available to site services. 3.2. Principles and practices of site establishment and different types and uses of builders' plant and equipment are identified and evaluated.
4. Determine trade sequencing.	4.1. Trade sequencing appropriate to the different forms of residential construction are identified and evaluated. 4.2. Structural systems commonly used in domestic scale buildings are described and sketched. 4.3. Types and principles of construction relevant to the domestic design and construction are identified and evaluated according to ***relevant legislation***, including BCA, and construction standards and

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ELEMENT	PERFORMANCE CRITERIA
	practices.
5. Evaluate and apply cyclone-resistant construction to buildings.	5.1. Cyclone category areas and code specification are defined. 5.2. Terrain categories and their application to cyclone design are defined. 5.3. Methods of 'tie down' construction are identified from BCA. 5.4. Applications of structural bracing principles are identified in specifications. 5.5. Alternative approaches of construction in cyclone areas are evaluated in accordance with BCA.
6. Evaluate construction standards and practices.	6.1. Standards and practices for claddings, linings, finishes and coatings associated with domestic scale buildings are identified and evaluated. 6.2. Construction standards and practices of window, door and joinery fabrication and installation are identified and evaluated. 6.3. Basic principles and integration of building services into the building are identified and evaluated. 6.4. Structural principles of loads, forces, stresses and strains applied in the design and construction of single storey domestic scale buildings are identified and evaluated. 6.5. ***Types***, ***principles***, ***standards and practices*** for the installation of the services in single and two storey residential dwellings are identified and evaluated. 6.6. Types, principles, construction standards and practices relating to domestic stair construction, balustrading and handrails are identified and evaluated.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

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REQUIRED SKILLS AND KNOWLEDGE

- ability to respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - communicate effects of planning and construction legislation to others
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret:
    - BCA
    - legislation
    - reports
    - specifications
    - standards
    - working drawings
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
  - written skills to:
    - document effects of legislation and standards
    - draft evaluation of own actions to make judgements about performance and necessary improvements
    - record planning and construction information
- numeracy skills to interpret complex mathematical information
- planning and organisational skills to collect, organise and analyse information
- technological skills to:
  - complete documentation and calculations
  - enable information gathering and analysis.

Required knowledge

Required knowledge for this unit is:

- access requirements for people with a disability and requirements of the DDA with regard to access
- authorities and powers of a building surveyor
- codes of conduct and ethics
- design and construction principles of buildings
- nature of materials and effect on performance
- processes for the administration and preparation of documentation
- processes for the interpretation of reports, working drawings and specifications
- relevant federal, state or territory legislation and local government policy and procedures
- research methods

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REQUIRED SKILLS AND KNOWLEDGE

- terminology, definitions and hazard identification.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational management policies and procedures, including quality assurance requirements where appropriate • apply the principles of construction, standards and services, and design and maintenance specifications; associated reporting of data, findings, recommendations and strategies for at least one domestic scale building project or equivalent in compliance with relevant legislation • provide reports to appropriate body/individual as determined by the project brief. • apply strategic plans, workplace policies and procedures.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the

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EVIDENCE GUIDE

	mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at

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EVIDENCE GUIDE

the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Planning and preparation include:
- assessment of conditions and hazards
- determination of work requirements
- identification of any equipment defects
- safety plans and policies
- work site inspection.

Construction principles for domestic scale buildings include:
- evaluation and identification of construction methods, standards and services in compliance with relevant legislation, design specifications, maintenance specifications
- domestic scale building projects requiring the application of principles of construction include provision of site access/facilities, work schedules, project milestones and the calculation and processing of application or

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RANGE STATEMENT

	inspection fees.
Reporting systems in accordance with organisational, legislative and quality assurance procedures include:	• desk-based assessment • site-based assessment.
Relevant legislation includes:	• that relevant to domestic scale buildings (or those similar in characteristics in terms of loading, construction and size and may include small industrial, commercial and public buildings).
Types, principles, standards and practices for standard construction include:	• communication systems • cupboard joinery and finishes • damp proof courses • electricity • flashings • floor, wall and ceiling finishes and coatings • floor, wall and ceiling linings, including fire-rated systems and acoustic system installations • footing systems • gas • heating and cooling systems • mechanical ventilation • membranes • mouldings • openings (floors, walls, ceilings and roofs) • paving • roof water plumbing and drainage • sarking and insulations • sewerage plumbing and drainage • structural floor systems • structural roof systems • structural wall systems • surface drainage • telephone • termite control • timber and aluminium-framed windows and doors • wall and floor cladding • wet area floor detailing.

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Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSV5002A Evaluate materials for construction of domestic scale buildings

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to evaluate and select materials for domestic scale buildings.

It relates to a range of building materials, including concrete, glass, timber, plastic and plasterboard in accordance with the Building Code of Australia (BCA).

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to evaluate materials for construction of domestic scale buildings, requiring the demonstration of research, analysis and evaluation for the choice and application of building materials and subsequent reporting skills within the context of relevant legislation, the BCA and Australian standards.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Analyse building materials.	1.1. Properties of materials are analysed and selected for performance in domestic scale building projects requiring evaluation. 1.2. Quality standards and performance of materials are identified according to BCA, ***adherence to legislative requirements*** and ***types of structures***. 1.3. Methods of testing materials are recorded. 1.4. Visual characteristics of materials are identified and recorded. 1.5. Compatibility between materials and their performance are identified and documented.
2. Investigate suitability of materials for typical domestic scale buildings.	2.1. Samples of commonly used construction materials are identified and selected for investigation according to their purpose and standard work practices. 2.2. ***Materials*** identified as structurally adequate and meeting ***standard specifications*** are selected in accordance with BCA. 2.3. Materials of a required fire resistance are selected in accordance with BCA. 2.4. Materials are selected based on cost-effectiveness and in accordance with manufacturer specifications. 2.5. Alternative materials for a given application are selected according to BCA.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and

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REQUIRED SKILLS AND KNOWLEDGE

confirm requirements, share information, listen and understand
- written skills to:
  - produce detailed specification notes
  - provide notations and dimensions on drawings
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication
- innovation skills to select suitable materials for building, taking into account a range of factors such as cost and environmental issues
- numeracy skills to produce drawings for residential buildings
- planning and organisational skills to collect, organise and analyse information
- problem solving skills to carry out tests on materials and to use and apply data for decision making
- technological skills to:
  - complete documentation and calculations
  - enable information gathering and analysis.

Required knowledge

Required knowledge for this unit is:

- authorities and powers of a building surveyor
- behaviour of structural members undergoing stress, strain, compression, bending or combined actions
- environmental issues impacting on material selection
- grading processes and grade markings used to categorise timber and timber products
- nature of materials and effect on performance
- processes for the administration and preparation of documentation
- processes for the interpretation of reports, working drawings and specifications
- relevant federal, state or territory legislation and local government policy and procedures
- research methods
- structural and design principles for buildings
- terminology, definitions and hazard identification.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the

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EVIDENCE GUIDE

Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational management policies and procedures, including quality assurance requirements where appropriate • evaluate, choose and apply various building materials; their subsequent maintenance; and associated reporting of data, findings, recommendations and strategies for at least one domestic scale building project or equivalent in compliance with relevant legislation • provide reports to appropriate body/individual as determined by the project brief. • apply strategic plans, workplace policies and procedures.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices

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EVIDENCE GUIDE

- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured

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EVIDENCE GUIDE

learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Properties of materials include:

- environmental considerations
- adherence to legislative requirements for the BCA.

Domestic scale building projects requiring evaluation include:

- domestic scale buildings, including existing and proposed structures
- provision of site access/facilities, work schedules and project milestones.

Adherence to legislative requirements is limited to:

- domestic scale buildings (similar in characteristics to those of residential dwellings in terms of loading, construction and size and may include small industrial, commercial and public buildings).

Types of structures include:

- residential structures with concrete skeleton and slabs
- residential structures with steel and metallic column and member construction
- residential structures with timber and other

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RANGE STATEMENT

	composite material construction • residential structures constructed from non-metallic materials.
Materials include:	• adhesives and sealants • admixtures • clay products • concrete and concrete products • glass • masonry • metal • mortar for load bearing walls • new relevant proprietary materials • plaster and plasterboard • plastic • pre-stressed structural concrete components • protective and fire-rated protective coatings • timber and timber products.
Standard specifications include industry standard specifications and may be:	• preliminary or outline specifications • developed specifications • detailed specifications addressing specific components such as structural or other requirements.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCSV5003A Produce working drawings for residential buildings

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to read and interpret plans and specifications and to undertake basic architectural drafting of conventional residential structures.

It includes the production of two and three-dimensional (3-D) drawings in accordance with standard industry drawing practice and to a level suitable for building permit approval.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to produce working drawings for residential buildings and requires the demonstration of two and three-dimensional drawing skills and compliance within the context of relevant legislation, the Building Code of Australia (BCA) and Australian standards.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Use drawing instruments, equipment and materials to set out drawings.	1.1. Drawing instruments, equipment and materials are used to produce ***working drawings for residential buildings*** with scaled line work, simple geometric shapes, lettering, numbering and correct setting out of drawings.
2. Produce drawings at varying scales using architectural conventions for linework, lettering and symbols.	2.1. Linework is applied in a range of different types and media in accordance with standard industry drawing practice for ***production of building drawings***. 2.2. Hand letter text is formed in a variety of formats. 2.3. Different drawing scales are identified and used. 2.4. Graphic symbols are identified and used. 2.5. Orthographic projection in building drafting applications is drawn accurately to scale. 2.6. Notations and dimensions are added to complete drawing.
3. Read and interpret plans and specifications for a single storey dwelling.	3.1. Interrelationships between plans and specifications are identified and interpreted. 3.2. Key information is located and interpreted according to drawings, specifications and ***application of Australian standards***.
4. Draw three dimensional sketches.	4.1. Annotated 3-D sketches of various building components are produced to specifications using parametric (e.g. isometric) or perspective techniques.
5. Produce building permit approval drawings.	5.1. Building permit approval drawings, including detailed specification notes for residential dwellings, are completed to architectural conventions.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management

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REQUIRED SKILLS AND KNOWLEDGE

systems

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - written skills to:
    - produce detailed specification notes
    - provide notations and dimensions on drawings
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
- interpret and apply information from plans and specifications to develop required drawings
- numeracy skills to produce drawings for residential buildings
- planning and organisational skills to collect, organise and analyse information
- technological skills to:
  - enable production of working drawings
  - complete documentation and calculations.

Required knowledge

Required knowledge for this unit is:

- codes of conduct and ethics
- drafting and drawing protocols
- processes for the administration and preparation of documentation
- processes for the interpretation of reports, working drawings and specifications
- relevant federal, state or territory legislation and local government policy and procedures
- research methods
- structural, design and construction principles of buildings
- terminology, definitions and fault identification.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational management policies and procedures, including quality assurance requirements where applicable • produce two and three-dimensional drawings for residential building projects, including at least one orthographic, one isometric and one perspective drawing • produce drawings to appropriate body/individual as determined by the project brief.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices

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EVIDENCE GUIDE

- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured

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EVIDENCE GUIDE

learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Working drawings for residential buildings include:

- area analysis
- BCA Class 1 and 10 buildings
- computer-generated or paper-based presentations
- construction notes
- details
- elevations
- floor plans
- general notes
- location
- neighbouring buildings
- plan and specification interpretation
- projections
- sections
- services
- single storey dwellings (elementary or conventional)

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RANGE STATEMENT

Production of building drawings includes:	• site plans
	• two and three-dimensional drawings.
	• banks and landscaping
	• base structure - timber and masonry
	• cathedral ceilings
	• certificate of title to land
	• chimney construction
	• complex roof and wall shapes
	• composite construction (e.g. steel and timber)
	• conversion of plans and specifications to architectural and building detail
	• drawing protocols, including:
	  • abbreviations
	  • legends
	  • lettering standards
	  • numbering
	  • paper size
	  • scale
	  • standard units of measurement
	  • symbols
	• electrical connections plan
	• excavation cut and fill
	• flashings and box gutters
	• general plumbing services plan
	• glazing, including bay window construction
	• insulation and sarking
	• internal and external wall claddings
	• joinery
	• land surveyor plans
	• large span timber beams and connections, including glue laminated beams
	• levels and contours
	• retaining walls
	• roof construction
	• sewerage connection and easement plan
	• soil classification and tests
	• stairs
	• stormwater connection and easement plan
	• timber and masonry
	• upper floor construction

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RANGE STATEMENT

Application of Australian standards includes:	• wall construction • window and door schedules. • AS1100 Architectural drawing and supplement • AS1684 Residential timber framing • AS2870 Residential slabs and footings • AS3700 Masonry.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSV5004A Apply legislation to urban development and building controls

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to research, interpret and apply appropriate land use and urban development to a conventional building project in compliance with relevant legislation and the Building Code of Australia (BCA).

Application of the Unit

Application of the unit This unit of competency supports the attainment of the understanding and skills to apply legislation to urban development and building controls through research, analysis, evaluation and reporting skills in the determination of compliance within the context of relevant legislation, the Building Code of Australia and Australian standards.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Promote sustainable building and conservation practices in the community.	1.1. Environmental changes are determined due to land use and building development according to the natural elements of specific localities. 1.2. Development of settlements and the evolution of urban structures for specific communities are researched, analysed and documented. 1.3. Constraints on building development sites are identified and reported according to physical nature of environment. 1.4. Sustainable development and the benefits of conservation are recorded and promoted. 1.5. Controls on development are analysed and reported.
2. Identify the legal requirements relating to building developments.	2.1. Components of land use and building legislation are identified and documented, including the BCA as it applies to building developments. 2.2. ***Legislation*** affecting forms of development, including environmental safeguards, is identified and recorded. 2.3. Factors influencing safety of buildings and structures according to legislative requirements are identified and reported. 2.4. Aims and objectives of building and land use legislation are interpreted.
Determine individual and community responsibilities relating to approval applications for building and land use developments.	2.5. Consent requirements for building and land use approval are determined in accordance with ***application of building and land use legislation***. 2.6. Development applications are prepared in accordance with legislative requirements. 2.7. List of relevant authorities involved with project development is documented. 2.8. Development application notices and responses are identified and prepared in accordance with legislative requirements. 2.9. Appeal rights for individuals and community relating to building and land use applications are identified and recorded in accordance with legislative requirements.
Interpret and apply building, land use and related legislation.	2.10. Building and land use legislation is applied to various classes of building in accordance with legislative requirements. 2.11. Special provisions of legislation are

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ELEMENT	PERFORMANCE CRITERIA
	researched, identified and recorded.
	2.12. Non-compliance with building, land use and other related environmental legislation is identified and recorded.
	2.13. Heritage and conservation legislation relating to building and land use is researched, identified and recorded.
	2.14. Environmental health issues influencing building and land use legislation are researched and documented.
Determine the legal responsibilities of builders and owners relative to building projects.	2.15. Responsibilities of builders and owners lodging building or land use applications are determined in accordance with legislative requirements.
	2.16. Notices, orders and issues with respect to applications and site safety signage requirements are identified and recorded in accordance with legislative requirements.
	2.17. Owner responsibility relating to construction of party walls is identified and recorded in accordance with legislative requirements.
	2.18. Owner responsibility relating to proposed work affecting adjoining land is identified and recorded in accordance with legislative requirements.
Apply special provisions of building and land use legislation.	2.19. Land division requirements are identified and recorded in accordance with legislative requirements.
	2.20. Special requirements for major projects relating to preparation and assessment of environmental impact statements are recorded in accordance with legislative requirements.
	2.21. Referral to prescribed government agencies and departments is identified and noted in accordance with legislative requirements.
	2.22. Land use requirements applying to specific locations are identified and recorded in accordance with legislative requirements.
	2.23. Vehicle parking requirements applying to developments are identified and recorded in accordance with legislative requirements.
Establish the system for	2.24. Responsibilities of individuals under building and land use legislation are identified and

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ELEMENT	PERFORMANCE CRITERIA
dispute resolution.	recorded in accordance with legislative requirements. 2.25. Appeal rights provided for under building and land use legislation are identified and recorded. 2.26. Consequences for non-compliance with orders and notices are documented.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, questioning to identify and confirm requirements, sharing information, listening and understanding
  - written skills to:
    - record and report information and evaluations
    - prepare development application notices and responses
  - read and interpret:
    - BCA
    - legislation
    - reports
    - specifications
    - working drawings
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
- planning and organisational skills to collect, organise and analyse information
- technological skills to:
  - complete documentation and calculations
  - enable information gathering and analysis.

Required knowledge

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REQUIRED SKILLS AND KNOWLEDGE

Required knowledge for this unit is:

- authorities and powers of a building surveyor
- control and appeal system
- current home/commercial building development criteria
- land use management models and concepts
- local market conditions
- processes for the administration and preparation of documentation
- processes for the interpretation of reports, working drawings and specifications
- relevant federal, state or territory legislation and local government policy and procedures
- research methods
- socioeconomic data.
- urban zoning.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- comply with OHS regulations applicable to workplace operations
- apply organisational management policies and procedures, including quality assurance requirements where appropriate
- evaluate, report data findings, recommend and classify at least one conventional building development in compliance with applicable local government planning scheme for urban development and building control projects associated with relevant legislation and the BCA
- provide reports to appropriate body/individual as determined by the project brief.
- apply strategic plans, and workplace policies and procedures.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the

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EVIDENCE GUIDE

mandatory task requirements

- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at

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EVIDENCE GUIDE

the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Legislation is limited to:

- compliance with building and land use legislation and the Building Code of Australia for the purposes of applying building controls and evaluating urban development procedures. It interrogates impacts of settlement, the physical environment and land use.

Application of building and land use legislation includes:

- commercial environment - may be affected by rising, steady or falling markets
- cadastral maps
- demographic and socioeconomic data on populations in catchment areas
- enterprise management reports
- environmental impact statements

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RANGE STATEMENT

- locality maps
- market indicators:
  - absorption rates
  - current market in the area
  - perceptions of the area
  - type of client likely to be attracted to the market
- notices and orders issued with respect to applications and site safety signage requirements
- property statistics
- relevant local authority
- urban planning and local government databases.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSV5005A Apply footing and geomechanical design principles to domestic scale buildings

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to apply footing and geomechanical design principles to domestic scale buildings or those of a similar loading, construction and size, such as small industrial, commercial or public buildings.

It includes the evaluation and distribution of soil types, and identification of appropriate footing systems and maintenance requirements for foundation components of the project.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to apply footing and geomechanical design principles to domestic scale buildings within the context of relevant legislation, the Building Code of Australia (BCA) and Australian standards.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

Nil

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Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Evaluate geological formation of rocks and their subsequent weathering to form various soil types.	1.1. Formation of igneous, sedimentary and metamorphic rocks is identified and documented. 1.2. Mode of transportation, deposition and formation of sands, gravels and clays are identified and documented.
2. Read and evaluate both topographical and geological maps.	2.1. Topographical and geological maps are interpreted without error. 2.2. Maps of both types are interpreted by drawing sections indicating features. 2.3. Retaining structures and systems suitable for various situations are identified.
3. Identify soil types and their behaviour.	3.1. Cohesive and granular soils are identified from hand specimens without error. 3.2. ***Soil types*** and ***soil properties*** are identified and calculated with reference to standards, codes and industry literature. 3.3. Effects of depth on overburden and pore water pressure are estimated.
4. Determine suitability of foundation soils to support various types of structures.	4.1. Meaning of total and differential settlement of a building is interpreted without error. 4.2. Factors influencing settlement and the ultimate bearing capacity of the ground are interpreted. 4.3. Total and net pressure on foundation soils due to the load of a structure is calculated to determine suitable ***foundation systems***.
5. Identify and apply the various methods and applications of soil testing.	5.1. Australian standard laboratory testing of permeability, strength, consolidation and point load tests (for rocks) is identified and interpreted. 5.2. Australian standard for carrying out sub-soil investigations and in situ testing is identified and interpreted. 5.3. Soil testing methods are selected and applied or accessed through competent agencies.
6. Determine footing systems for the site conditions and building type.	6.1. Mechanism of soil shrinkage and swelling is interpreted. 6.2. Site classification for the design and construction of a footing system for a single storey dwelling is in accordance with the BCA. 6.3. ***Application of footings and geomechanical principles*** for the footing system for a domestic scale

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ELEMENT	PERFORMANCE CRITERIA
	building is determined in accordance with BCA and ***adherence to legislative requirements***.
7. Determine site maintenance requirements necessary to minimise long-term damage to the structure.	7.1. Influence of moisture content changes in clay soils on ***maintenance requirements*** is determined. 7.2. Minimisation strategies for long-term damage to a structure with respect to the soil conditions found on a particular site where active clays are located are recommended.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - written skills to report evaluations
  - read and interpret:
    - BCA
    - legislation
    - reports
    - specifications
    - working drawings
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
- numeracy skills to interpret complex mathematical information
- planning and organisational skills to collect, organise and analyse information
- problem solving skills to carry out tests and calculations and to use and apply data for decision making
- technological skills to:

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REQUIRED SKILLS AND KNOWLEDGE

- complete documentation and calculations
- enable information gathering and analysis.

Required knowledge

Required knowledge for this unit is:

- behaviour of structural members undergoing stress, strain, compression, bending or combined actions
- design principles and concepts for footings
- geomechanical engineering principles
- nature of materials and effect on performance
- nature of soil mechanics and effect of performance in problem soils
- processes for the interpretation of working drawings and specifications
- processes for the preparation of documentation
- relevant federal, state or territory legislation and local government policy and procedures
- research methods
- structural design principles in buildings.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational management policies and procedures, including quality assurance requirements where applicable • assess the footing requirements for at least one domestic scale building project or equivalent, which includes advice on positioning and sizing • analyse and report on the soil types and properties of at least two domestic scale building projects or equivalent • provide reports to appropriate body/individual as determined by the project brief.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions

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EVIDENCE GUIDE

- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability

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EVIDENCE GUIDE

and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Soil types include:

- clay soils and rock
- saturated granular soils.

Soil properties include:

- bulk density
- degree of saturation
- dry density
- moisture content
- porosity
- void ratio.

Foundation systems must be suitable for:

- building type
- site conditions.

Application of footings and geomechanical principles includes:

- assessment of geomechanical and footing design for domestic scale buildings
- identification of the nature, composition, classification and distribution of soil type.

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RANGE STATEMENT

Adherence to legislative requirements is limited to:	• domestic scale buildings (similar in characteristics to those of residential dwellings in terms of loading, construction and size and may include small industrial, commercial and public buildings).
Maintenance requirements include:	• identification of surface water, ground water and tree root systems.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSV5006A Assess construction faults in residential buildings

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to identify construction faults in residential buildings.

It includes the identification and evaluation of construction problems and determination of alternative building methods in accordance with legislative requirements.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to undertake research, analysis, evaluation and reporting for the assessment of construction faults, determination of rectification and alternative building methods, within the context of relevant legislation, the Building Code of Australia (BCA) and Australian standards.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and analyse construction faults arising on residential building sites.	1.1. Information to identify and analyse construction faults is collected relating to the specific construction problem. 1.2. Construction problem in ***construction in residential buildings*** is identified relative to original specifications and ***form of construction***. 1.3. Construction problem is communicated to appropriate personnel and documented in accordance with standard work practices. 1.4. Problem solving techniques are used and typical ***construction faults*** and problems for ***building categories*** are identified and action to rectify is deemed to be in accordance with the BCA.
2. Identify construction techniques, methods and materials.	2.1. Building terminology is used accurately in the communication of issues. 2.2. Existing or designed construction problems are identified and evaluated from working drawings and specifications. 2.3. Alternative methods and materials to meet construction aims and objectives are prepared to specification nominated in the BCA and ***Australian standards***. 2.4. Detailed sketches of available alternative methods and materials available to meet the construction aims and objectives are prepared to specification.
3. Resolve construction faults using alternative construction methods.	3.1. Suitable construction methods from available alternative solutions are evaluated and recommended to resolve the problem in accordance with project aims and objectives, the BCA, relevant State and Territory Appendix to the BCA and Australian standard. 3.2. Selected method is integrated into the project in order to resolve the construction problems in accordance with project aims. 3.3. Evaluation of available alternative forms of construction is carried out in accordance with project aims.
4. Resolve common on-site faults with building materials.	4.1. Commonly occurring on-site problems with building materials and their causes are evaluated. 4.2. Corrective and preventative measures are identified and implemented.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - communicate construction problems to appropriate personnel
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret:
    - Australian standards
    - BCA
    - legislation
    - reports
    - specifications
    - working drawings
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - use accurate terminology
  - written skills to document construction problems and solutions and recommendations to resolve problems
- numeracy skills to calculate workplace requirements
- planning and organisational skills to collect, organise and analyse information
- technological skills to:
  - complete documentation and calculations
  - enable information gathering and analysis.

Required knowledge

Required knowledge for this unit is:

- authorities and powers of a building surveyor
- design and construction principles of buildings
- nature of materials and effect on performance

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REQUIRED SKILLS AND KNOWLEDGE

- processes for the administration and preparation of documentation
- processes for the interpretation of reports, working drawings and specifications
- relevant federal, state or territory legislation and local government policy and procedures
- research methods.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- comply with OHS regulations applicable to workplace operations
- apply organisational management policies and procedures, including quality assurance requirements where appropriate
- assess construction faults in residential buildings, determine rectification strategy and consider alternative construction methods, as well as the associated reporting of data, findings, recommendations and strategies for at least one residential building project or equivalent in compliance with relevant legislation
- provide reports to appropriate body/individual as determined by the project brief.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements

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EVIDENCE GUIDE

- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete

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confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Construction in residential buildings includes:
- evaluation and identification of construction faults and determination of alternative methods, standards and services in compliance with relevant legislation, design specifications, maintenance specifications and adherence to legislative requirements for BCA Class 1 and 10 buildings.

Forms of construction include:
- autoclaved aerated concrete (AAC)
- earth (mud brick and rammed earth)
- pole-framed
- steel-framed
- timber-framed.

Construction faults include:
- installation
- refurbishing

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RANGE STATEMENT

	• renovation • restoration.
Building categories include:	• low-rise residential buildings • single storey buildings.
Australian standards include:	• AS1288 Installation of glass in buildings • AS1684 Residential timber framed construction • AS2050 Fixing of roof tiles • AS2180 Metal rainwater goods, selection and installation • AS2208 Safety glazing materials for use in buildings • AS2627.1 Thermal insulation of roof/ceilings and walls in dwellings • AS2870.1 Residential slabs and footings • AS3500 National plumbing code • AS3600 Concrete structures • AS3623 Domestic metal framing • AS3660 Protection of buildings from subterranean termites • AS3700 Masonry • AS3740: 2004 Waterproofing of wet areas in residential buildings • AS4349 Inspection of buildings.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCSV5007A Undertake site surveys and set-out procedures for building projects

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to undertake site surveys and set out procedures for civil and residential building projects.

It includes the use of basic measuring and levelling equipment, recording and interpretation of data, and evaluation of and compliance with relevant legislation.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to undertake site surveys and set out procedures for building projects within the context of relevant legislation, the Building Code of Australia (BCA) and Australian standards.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Measure linear distances on site using building and basic surveying equipment.	1.1. Areas and volumes of regular shapes and figures are calculated. 1.2. Distances are measured accurately, independent of site characteristics and measurement methods, using ***basic surveying equipment***. 1.3. Distances are measured on building sites within a tolerance of 1mm error in 4.0m (1:4000) or without error. 1.4. Overall distances are calculated from field data without error. 1.5. Slope corrections are recorded accurately.
2. Carry out a closed level transverse procedure using the rise and fall recording method.	2.1. Levelling equipment is inspected for damage, wear and serviceability. 2.2. Set-up steps are performed and instruments made ready for use without error. 2.3. Instruments are checked for accuracy and adjusted (where possible) within 3mm over 60 metres using the two peg test. 2.4. Closed level traverse procedure is completed with a minimum of 15 points, including an inverted reading, with a minimum of 5 change points all within a closing tolerance of 10mm. 2.5. Data of traverse is correctly recorded and extended including mathematical column checks by use of the rise and fall method.
3. Perform grid surveys for contour purposes.	3.1. Site identification for ***site surveying and setting out procedures*** is established and all survey pegs are located without error. 3.2. Grid distances are determined and grid is pegged correctly. 3.3. Site detail that may effect building operation is recorded without error. 3.4. Reduced levels of all grid points are determined from a close performed onto the bench mark to within 10mm, without error. 3.5. Contour lines are plotted on the site plan at intervals appropriate to the site with longitudinal and cross sections pegged and measured as nominated within 100mm. Sections are plotted to scale without error. 3.6. Grades of line are determined within a 0.5% tolerance and expressed as percentage, rise to run

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ELEMENT	PERFORMANCE CRITERIA
	ratio, or degrees. 3.7. Cut and fill volumes of soil are calculated from site plan using contour lines for determining reduced levels (RLs) within 5% tolerance.
4. Set out T-shaped or L-shaped buildings on a selected site with minimal profiles.	4.1. Site information is identified from site plan and dimensions are checked on plan drawings without error. 4.2. Site is identified and survey pegs are measured to ensure correct identification occurs before pilot pegs are positioned within 50mm of true location of the squared building dimensions. 4.3. Profile pegs are set up on site at a working distance from pilot pegs and parallel to pilot line. 4.4. Profile boards are fixed to pegs and level within 5mm and 15mm of each other. 4.5. Profiles are set out on steep slopes accurately.
5. Set up and use levelling devices to determine horizontal and vertical angles.	5.1. Basic tests on levelling devices' accuracy/adjustment are performed to manufacturer specifications. 5.2. Temporary adjustments to set up levelling devices are carried out to standard operating procedures. 5.3. Levelling devices are used to determine (read) both horizontal and vertical angles to an accuracy of 20 seconds. 5.4. Levelling devices are used to set our horizontal angles to an accuracy of 20 seconds. 5.5. Site is set out to specifications using a typical levelling device and tape.
6. Identify suitability of levelling and surveying equipment for large building projects.	6.1. Differences between various types of specialised surveying equipment are researched and recorded. 6.2. Equipment is used to control set out and vertical is identified. 6.3. Basic differences in survey control and set out between frame and concrete multi-storey buildings is outlined. 6.4. Survey of each level for vertical accuracy of 10mm is carried out using two levelling devices.
7. Compute coordinates, bearings and distances related to grids and general set out work on large building sites.	7.1. Angular relationship between different bearings (whole circle) is demonstrated and bearings from angles and fixed lines are determined. 7.2. Bearing and distance between two sets of coordinates (north and east) are calculated.

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ELEMENT	PERFORMANCE CRITERIA
	7.3. Coordinates of a point, given the bearing and distance from a point with known coordinates, are calculated. 7.4. Offsets from a coordinated point, given the bearing and distance from a point with known coordinates, are determined. 7.5. Information necessary to set out a structure, or part thereof, using a site plan with positions fixed by a mixture of bearings and distances, offsets and coordinates is calculated.
Evaluate documents and plans incorporated in land titles.	7.6. Documents that make up a land title are listed and their relationship to each other outlined according to relevant government legislation. 7.7. Different restrictions on the use of land title and restricted development are illustrated. 7.8. Building covenants and statutory bodies responsible are identified. 7.9. Restrictions stated in legislation that regulate setbacks for residential buildings are identified and differentiated.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - communicate construction problems to appropriate personnel
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret:
    - field data
    - reports

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REQUIRED SKILLS AND KNOWLEDGE

    - site plan
    - specifications
    - working drawings
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to:
    - document suitability of surveying equipment
    - record mathematical information
- numeracy skills to apply measurements and calculations
- planning and organisational skills to collect, organise and analyse information
- problem solving skills to identify faults and problems in, and accuracy of, equipment and take appropriate remedial action
- technological skills to:
  - complete documentation and calculations
  - enable information gathering and analysis.

Required knowledge

Required knowledge for this unit is:

- level and grade checking to perform survey control to accuracy criteria
- processes for the administration and preparation of documentation
- processes for the interpretation of reports, working drawings and specifications
- relevant federal, state or territory legislation and local government policy and procedures
- research methods
- specifications and capabilities of surveying and levelling equipment and their componentry
- structural, design and construction principles of buildings.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational management policies and procedures, including quality assurance requirements where applicable. • apply surveys and set out procedures to building projects and the associated reporting of data, findings, recommendations and strategies for at least one civil or residential building project or equivalent in compliance with relevant legislation • provide reports to appropriate body/individual as determined by the project brief.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying

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EVIDENCE GUIDE

	safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

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EVIDENCE GUIDE

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Basic surveying equipment includes:

- electronic distance measuring (EDM)
- laser instruments
- optical plummets
- pegs
- theodolites.

Site surveying and setting out procedures:

- include civil and residential building development projects
- may include commercial and industrial projects.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSV5008A Apply building control legislation to building surveying

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to research, interpret and apply building control legislation for use in building surveying activities relating to domestic scale buildings and structures.

It includes the evaluation of the Australian common law system and the various sources of law applicable to building surveying activities and the identification and application of the professional code of ethics required for the assessment and inspection of buildings.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to apply building control legislation to building surveying within the context of common law, relevant legislation, the Building Code of Australia (BCA) and Australian standards.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Analyse the Australian administrative legal system.	1.1. Differences between ***Australian common law***, statute law, delegated legislation and local government law are analysed and documented. 1.2. Civil law and examples of civil action relevant to ***building control legislation*** are identified and analysed. 1.3. Administrative law relevant to building control is determined and interpreted.
2. Evaluate administrative law applicable to building control activities.	2.1. Individual elements of judicial review legislation are evaluated and documented. 2.2. Natural justice is identified and evaluated as it relates to decision making through the building control process.
3. Analyse the procedures and benefits of enforcing the law.	3.1. Legislative benefits and examples from building control enforcement are investigated and documented. 3.2. Major regulatory enforcement strategies are identified and recorded. 3.3. Powers of entry are identified and analysed. 3.4. Warrants and legal considerations in obtaining a warrant are identified and documented. 3.5. Types of ***evidence*** and the gathering of evidence for the purposes of investigating and proving a breach of legislation are identified and documented. 3.6. Offences are identified and the process for drafting and issuing a notice is evaluated and documented.
4. Analyse the impact of other legislation on state and territory building and development control legislation.	4.1. Implications of ***federal legislation*** on state and territory building and development control legislation are examined and documented. 4.2. Implications of other ***state and territory legislation*** on building and development control legislation are examined and documented.
5. Analyse the professional code of conduct and ethics applicable to building control.	5.1. Concepts regarding conflict of interest as specified by relevant legislation are identified and recorded. 5.2. Concepts regarding duty of care as it relates to common law are evaluated and documented.
6. Analyse the concepts of liability and responsibility of	6.1. Liability of building practitioners as specified by relevant legislation is evaluated and documented. 6.2. Responsibilities and statutory duties of building

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ELEMENT	PERFORMANCE CRITERIA
building practitioners as detailed in legislation.	practitioners as specified by relevant legislation are evaluated and documented.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret:
    - enforcement strategies
    - legislation
    - reports
    - other relevant documentation
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to record and evaluate building control legislation to evaluation of own actions to make judgements about performance and necessary improvements
- technological skills to:
  - complete documentation and calculations
  - enable information gathering and analysis.

Required knowledge

Required knowledge for this unit is:

- access requirements for people with a disability and requirements of the Disability Discrimination Act (DDA) with regard to access
- applications of law and legal principles in building surveying
- Australian legal system

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REQUIRED SKILLS AND KNOWLEDGE

- building policy and legislation
- legal terminology, definitions, processes and procedures used in standard court operations
- processes for the administration and preparation of documentation
- relevant federal, state or territory legislation and local government policy and procedures
- research processes and strategies.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- comply with OHS regulations applicable to workplace operations
- apply organisational management policies and procedures, including quality assurance requirements where applicable
- perform research, interpretation, analysis and reporting of findings for at least one administrative law case relating to building control activities, at least one federal legislation case impacting on building and development control legislation, at least one other legislation case impacting on building and development control legislation, all in accordance with the professional code of conduct and ethics applicable to building control
- provide reports to appropriate body/individual as determined by the project brief.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

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- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and

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EVIDENCE GUIDE

separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Australian common law includes:

- professional code of ethics required for the assessment and inspection of buildings
- system and laws applicable to building surveying.

Building control legislation includes:

- domestic scale buildings and structures.

Evidence includes:

- oral, documented, real, direct, secondary, hearsay and admissible and inadmissible evidence.

Federal legislation includes:

- DDA.

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RANGE STATEMENT

State and territory legislation includes:	• environmental health • local government by-laws • OHS • planning.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSV5009A Assess the impact of fire on building materials

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to assess the impact of fire on building materials.

It includes the research, analysis and reporting of testing conducted on a range of building materials and structures in differing circumstances to determine combustion, flammability, heat transfer, burning conditions, building material behaviour, fire loads of buildings and fire resistance.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to assess the impact of fire on building materials within the context of relevant legislation, the Building Code of Australia (BCA) and Australian standards.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Research combustion process as it relates to different materials.	1.1. Processes and flame characteristics of combustion of solids, liquids and gases are identified and recorded from a ***research and analysis process***. 1.2. Factors contributing to combustion are identified and recorded. 1.3. Endothermic and exothermic processes are researched and recorded. 1.4. Heat of combustion fuels is calculated without error. 1.5. Factors contributing to propagating flame front are analysed and recorded.
2. Analyse flammability of matter in different states.	2.1. Flammability in terms of fire triangle and fire tetrahedron theories is analysed and recorded. 2.2. Flammability of matter in physical states is examined and recorded. 2.3. Flammability in terms of upper and lower flammability limits is identified and recorded. 2.4. Factors contributing to the explosiveness of dusts are identified and recorded.
3. Identify conditions of burning at the fire point.	3.1. Limiting adiabatic flame temperature (LAFT) values are interpreted accurately. 3.2. Process of extinguishment related to the combustion process is analysed and recorded.
4. Record mechanisms of heat transfer during fire growth, development and spread.	4.1. Heat transfer factors in fire situations are identified and recorded. 4.2. Processes of self-induced heating are analysed and recorded. 4.3. Behaviour of fires in partially and fully enclosed compartments are observed and recorded. 4.4. Amount of smoke produced from a fire is calculated.
5. Record the behaviour of building materials subjected to extreme levels of heat.	5.1. Building ***materials*** are evaluated for fire safety and fire resistance levels are recorded. 5.2. Effect of fire on structural and non-structural elements is identified and recorded. 5.3. Effect of fire on plastic and textile materials is identified and recorded.
6. Devise the fire load of a building and	6.1. Effect of building occupancy on potential fire load is calculated.

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ELEMENT	PERFORMANCE CRITERIA
describe the effect on the BCA classification and compartmentation.	6.2. Factors that may increase the severity of a fire are researched and recorded. 6.3. Fire load, fire severity and general burning behaviour of materials are researched and recorded.
7. Report the requirements of fire resistance of building elements and forms of construction.	7.1. Fire resistance levels of building elements and forms of construction are researched and recorded. 7.2. Early fire hazard indices are applied to the BCA requirements. 7.3. Australian standards relating to fire testing of building materials and forms of construction are researched and recorded.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - evaluate own actions to make judgements about performance
  - read and interpret Australian standards
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
  - written skills to report testing of building materials
- numeracy skills to apply calculations and interpret data
- problem solving skills to carry out tests and calculations and to use and apply data for decision making
- technological skills to:
  - complete documentation and calculations
  - enable information gathering and analysis.

Required knowledge

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REQUIRED SKILLS AND KNOWLEDGE

Required knowledge for this unit is:

- characteristics of endothermic and exothermic processes
- extinguishment principles
- LAFT values
- principles of combustion and flammability
- processes for the preparation of documentation
- relevant federal, state or territory legislation and local government policy and procedures
- research methods.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational management policies and procedures, including quality assurance requirements where applicable • perform fire research, analysis, identification and reporting of findings for at least one fire assessment or equivalent, including at least three different materials • assess applicable fire safe suitable building materials for at least one building project • provide reports to appropriate body/individual as determined by the project brief.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying

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EVIDENCE GUIDE

	safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

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EVIDENCE GUIDE

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Research and analysis process includes:

- definitions and test outcomes
- material safety data sheets (MSDS)
- reports
- written records and historical data.

Materials:

- include timber, plastic and fabric building materials and structures
- may include other types of fire load forming building materials.

Effect of fire on structural and non-structural elements includes:

- behaviour of building materials subject to extreme heat
- combustion of materials
- fire loads of buildings
- fire resistance of materials
- flammability circumstances
- heat transfer characteristics
- point of fire burning conditions.

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Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSV5010A Interact with clients in a regulated environment

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to initiate and undertake consultation with individuals and groups in regard to building surveying practices.

It includes the identification and implementation of appropriate interaction models according to community demographics, cultural considerations and social stratification; the analysis and evaluation of data to enable informed decision-making; and the presentation of findings to clients and other appropriate stakeholders.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to interact with clients in a regulated environment within the context of relevant legislation, the Building Code of Australia (BCA) and Australian standards.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Devise interaction strategies.	1.1. Interested and affected individuals and parties are identified. 1.2. Range of ***interaction strategies*** is identified, assessed for suitability and selected. 1.3. Resources required to conduct interaction are determined. 1.4. Regulations are reviewed to ensure strategies meet all criteria.
2. Assess demographic, cultural, social and psychological considerations.	2.1. Needs of disadvantaged individuals and groups are identified and incorporated form ***relevant information and social theory***. 2.2. Cultural, social and psychological factors are considered and incorporated. 2.3. Urban, ***demographic***, technological, political and economic effects are considered and incorporated. 2.4. Collective community behaviour is assessed.
3. Communicate legislative requirements to individuals and groups.	3.1. Information is prepared that is clear, accurate and ***appropriate to the needs of the parties involved***. 3.2. All parties involved are informed of the applicable legislation through ***presentation of information***. 3.3. Information is provided to affected parties at an appropriate time and place and in ***an appropriate way***. 3.4. Interaction is undertaken in an orderly manner to ensure all viewpoints are canvassed.
4. Record, analyse and report results.	4.1. Responses are assessed and checked against the project brief. 4.2. Appropriate suggestions for improvement are incorporated into the project brief. 4.3. Accurate report is prepared, including recommendations for approval. 4.4. Overall effectiveness of the interaction is reviewed and evaluated, with action taken where required.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to prepare information in alternative formats and to provide access to consultations for diverse groups through interpreters, etc.
- ability to respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - consult with the community, including provision of information about legislation
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret:
    - regulations
    - legislation
    - other relevant documentation
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
  - written skills to:
    - record and report results of interaction with the community
    - prepare information
- innovation skills to identify and implement appropriate and diverse strategies for interacting with diverse communities
- organisational and time management skills to prepare information for meetings and to arrange and conduct meetings to timelines
- problem solving skills to review feedback and select appropriate suggestions for improvement for inclusion in report
- technological skills to:
  - complete documentation, including information materials and reports
  - enable information gathering and analysis.

Required knowledge

Required knowledge for this unit is:

- effects and psychological theories relevant to working with clients in a regulated environment, such as:
  - social stratification
  - social change

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REQUIRED SKILLS AND KNOWLEDGE

- technological change
- local factors affecting communities and individuals
- relevant federal, state or territory legislation and local government policy and procedures
- research methods
- strategies for consultation
- urbanisation.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational management policies and procedures, including quality assurance requirements where applicable • perform a management role in the identification and implementation of at least one client negotiation and consultation process or equivalent • provide reports to appropriate body/individual as determined by the project brief.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity

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EVIDENCE GUIDE

- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and

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EVIDENCE GUIDE

supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Interested and affected individuals and parties include:

- existing community groups
- government agencies
- individuals and special interest groups
- private sector businesses
- social groups and emergency services.

Interaction strategies include:

- client meetings
- home and site visits
- meetings of relevant stakeholders
- surveys.

Relevant information and social theory include:

- awareness of diverse cultures
- collective behaviour
- deviance
- economic order
- inequality
- political order social change and interaction
- stratification
- technology and the environment
- the family

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RANGE STATEMENT

	• urbanisation.
Demographics include:	• age • ethnicity • gender • individual and group profiles • social stratification.

Appropriate to the needs of the parties involved involves:	• providing material in alternative formats, such as:
	  • large print
	  • other languages.

Presentation of information includes:	• computer simulations • display plans • graphics • handouts • models • software presentations • videos.
An appropriate way includes:	• taking into account access issues, such as parking or building access and cultural requirements or protocols • using assistive technology, for example telecommunication device for the deaf (such as TTY) or video captioning • using interpreters, including sign language interpreters.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCSV5011A Apply building codes and standards to residential buildings

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to ensure that the building process complies with the Building Code of Australia (BCA) and relevant Australian standards.

The unit applies to residential buildings and includes the evaluation and interpretation of building requirements, classification of buildings according to the BCA criteria and strategies for compliance.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to apply building codes and standards to residential buildings within the context of relevant legislation, the BCA and Australian standards.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Analyse the purpose and basic intent of the BCA.	1.1. Objectives of the BCA and the purpose of its respective components in relation to ***construction in residential buildings*** and ***building categories*** are evaluated and documented. 1.2. Deemed-to-satisfy (DTS) concept for construction to meet BCA requirements is evaluated and documented.
2. Locate and interpret code and standard requirements applicable to particular projects.	2.1. Clauses from the BCA that apply to particular ***residential building projects requiring review of compliance issues*** are identified and documented. 2.2. Prescriptive requirements of relevant BCA clauses and ***standard specifications*** are determined. 2.3. Requirements of Australian standards referenced in the BCA are identified and documented. 2.4. Special requirements that may be applicable to specific areas of ***building surveying procedures*** are identified and documented.
3. Classify buildings.	3.1. Nature of a building is determined in regard to its proposed use and site arrangement. 3.2. BCA criteria are applied to determine the defined classification. 3.3. BCA requirements are interpreted for multiple classifications.
4. Apply solutions to construction problems for compliance with the BCA.	4.1. Criteria to ensure construction methods comply with the intent of the BCA are determined. 4.2. Alternative approaches to construction problems that comply with the requirements of the BCA are reported. 4.3. Assessment methods used to determine whether a building solution complies with performance requirements or DTS provisions of BCA are analysed and applied. 4.4. Assessment methods are confirmed and identified as appropriate to meet the DTS provisions of BCA.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret:
    - Australian standards
    - BCA
    - other relevant documentation
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
  - written skills to:
    - document building requirements
    - report alternative approaches to construction problem
- innovation skills to develop compliant alternative solutions to construction problems
- planning and organisational skills to collect, organise and analyse information
- technological skills to:
  - complete documentation and calculations
  - enable information gathering and analysis.

Required knowledge

Required knowledge for this unit is:

- authorities and powers of a building surveyor
- behaviour of structural members undergoing stress, strain, compression, bending or combined actions
- BCA and primary referenced Australian standards
- criteria for Class 1 and 10 buildings
- design, construction and structural principles of buildings
- DTS provisions
- processes for the administration and preparation of documentation
- processes for the interpretation of reports, working drawings and specifications
- relevant federal, state or territory legislation and local government policy and procedures

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REQUIRED SKILLS AND KNOWLEDGE

- research methods.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational management policies and procedures, including quality assurance requirements where appropriate • classify construction in residential buildings through the evaluation and interpretation of compliance with the BCA and associated reporting of data, findings, recommendations and strategies for at least one residential building project or equivalent in compliance with relevant legislation • provide reports to appropriate body/individual as determined by the project brief.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory

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EVIDENCE GUIDE

	or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured

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EVIDENCE GUIDE

learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Construction in residential buildings includes:

- compliance with relevant legislation
- design specifications
- evaluation, interpretation and adherence to legislative requirements for BCA Class 1 and 10 buildings
- maintenance specifications
- relevant Australian standards.

Building categories include:

- low-rise residential buildings

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RANGE STATEMENT

Residential building projects requiring review of compliance issues include:	• single storey buildings. • calculation and processing of application or inspection fees • project milestones • provision of site access/facilities • work schedules.
Standard specifications include:	• developed or detailed specifications addressing specific components, such as structural or other requirements • industry standard specifications • preliminary and outline specifications.
Building surveying procedures include:	• mechanical, structural, electrical and other services.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSV5012A Assess timber-framed designs for one and two storey buildings

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to select structural members for a timber-framed domestic building up to and including two storeys.

It includes the evaluation of plans and specifications, and selection of structural members for ceiling and roof framing, timber wall frames, timber stumps, floor bearers and joists. It requires compliance with all relevant legislation, the Building Code of Australia (BCA) and Australian standards.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to assess timber-framed designs for one and two storey buildings, assess timber-framed designs, select structural members and identify and rectify faults within the context of relevant legislation, the BCA and Australian standards.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Assess plans and specifications for size, span and spacing of structural members required in ceiling and roof framing.	1.1. Access is obtained to relevant plans, specifications and documentation related to ***structural members required in ceiling and roof framing*** for required ***building categories***. 1.2. Specified timber species and stress grading are identified. 1.3. True length of common rafter and overhand and economical size of common rafter are determined to support specified roof structure and covering. 1.4. Maximum span of common rafter is determined. 1.5. Position, location and direction of struts and strutting beams to support roof and ceiling loads are determined and documented. 1.6. Method of support at hip and valley rafters is determined and documented. 1.7. Location, direction and span of ceiling joists and hanging beams to support specified roof design are determined and documented. 1.8. Nominated member sizes, spans, spacings and locations are listed, documented and checked for accuracy against plans and specifications.
2. Assess plans and specifications for permanent wind bracing requirements for nominated design gust wind speeds.	2.1. Access is obtained to relevant plans, specifications and documentation for ***assessment of timber-framed designs***. 2.2. Location and category of building site is identified against design gust wind speed calculations. 2.3. Wind directions are selected and noted on plans. 2.4. Type and number of bracing units for each wind direction are selected. 2.5. Bracing details and description are documented, based upon calculations.
3. Assess plans and specifications for size, span and spacings of structural members for timber wall frames.	3.1. Access is obtained to relevant plans, specifications and documentation. 3.2. Specified timber species and stress grading are identified. 3.3. Roof load width for walls supporting ceiling and roof structures for a specified roof covering is determined. 3.4. Economical size for common wall studs is determined.

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ELEMENT	PERFORMANCE CRITERIA
	3.5. Size of top and bottom wall plates is determined according to load bearing conditions. 3.6. Size of studs at side window and door opening is determined. 3.7. Size of lintels to nominated openings is determined. 3.8. Size of timber posts and beams supporting overhands is determined. 3.9. Nominated member sizes, spans, spacings and locations are identified, listed, documented and checked against plans and specifications for accuracy.
4. Assess plans and specifications for size, span and spacing of structural members for timber stumps, floor bearers and joists.	4.1. Access is obtained to relevant plans, specifications and documentation. 4.2. Specified timber species and stress grading are identified. 4.3. Economical size for floor bearer and joist to suit maximum spans and spacings is determined. 4.4. Size of timber stumps and footing type and size required to support structural members are determined. 4.5. Size for timber trimmers, working and trimming joists for stair opening to suit maximum spans and spacings is determined. 4.6. Location, direction and span of bearers and joists to support specified structure are determined. 4.7. Nominated member sizes, spans, spacings, direction and bracings are identified, listed, documented and checked for accuracy against plans and specifications.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management

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REQUIRED SKILLS AND KNOWLEDGE

systems

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret:
    - plans and specifications
    - other relevant documentation
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
  - written skills to record mathematical information
- numeracy skills to apply measurements and calculations
- planning and organisational skills to collect, organise and analyse information
- technological skills to:
  - complete documentation and calculations
  - enable information gathering and analysis.

Required knowledge

Required knowledge for this unit is:

- authorities and powers of a building surveyor
- behaviour of structural members undergoing stress, strain, compression, bending or combined actions
- grading processes and grade markings used to categorise timber and timber products
- manufactured timber framing systems
- nature of timber and effect of physiology and timber pests on its performance
- processes for the administration and preparation of documentation
- processes for the application of wind force, raking forces, and bracing and tie down systems
- processes for the interpretation of reports, working drawings and specifications
- relevant federal, state or territory legislation and local government policy and procedures
- research methods
- structural, design and construction principles of buildings, including the application of timber in buildings.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- comply with OHS regulations applicable to workplace operations
- apply organisational management policies and procedures, including quality assurance requirements where appropriate
- assess timber-framed designs, evaluate plans and specifications, and identify faults; select structural members for roofs, ceilings, walls, floors and stumps relating to performance and the associated reporting of data, findings, recommendations and rectification strategies for at least one building project of up to two storeys or equivalent in compliance with relevant legislation
- provide reports to appropriate body/individual as determined by the project brief.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements

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EVIDENCE GUIDE

- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete

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EVIDENCE GUIDE

	confidence in the person's demonstrated ability and applied knowledge • all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed. Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.
Guidance information for assessment	This unit could be assessed on its own or in combination with other units relevant to the job function, for example: • CPCCSV5001A Assess the construction of domestic scale buildings • CPCCSV5006A Assess construction faults in residential buildings. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support. Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating

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RANGE STATEMENT

conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Structural members required in ceiling and roof framing:

- includes evaluation and identification of structural members used in:
  - ceiling and roof framing
  - floor bearer and joist installing
  - timber stumping
  - timber wall framing
- suitable for the building design in compliance with:
  - BCA
  - design specifications
  - legislative requirements
  - maintenance specifications
  - relevant legislation.

Building categories include:

- all timber-framed domestic scale buildings up to and including two storeys.

Assessment of timber-framed designs:

- includes the identification and recording and reporting of faults, in accordance with workplace providers, in verbal or written format
- timber-framed designs include:
  - floor framing, such as loose set single storey timber structures and two storey suspended upper floor level construction
  - overhang framing with soffits and eaves, attached carport, attached veranda and attached patio
  - roof framing, such as skillion, gable, hip and valley and cathedral
  - wall framing of various sizes, bracing locations and tie downs.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSV5013A Apply principles of energy efficient design to buildings

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to apply energy efficient design to buildings.

It includes the evaluation of building designs to establish suitable forms of construction and the identification of appropriate energy consumption practices for incorporation into design briefs.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to apply principles of energy efficient design to buildings within the context of relevant legislation, the Building Code of Australia (BCA) and Australian standards.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify the significance of the macro and micro climates in the construction process.	1.1. Climate zones and their characteristics are identified and recorded for ***design projects requiring review of energy efficiencies***. 1.2. Methods for establishing characteristics of specific climates are established and documented. 1.3. Construction materials and methods suited to specific climates are determined.
2. Assess design criteria for energy efficient construction.	2.1. Characteristics and location-specific requirements to establish a design are identified and listed. 2.2. Appropriate form of construction is selected and documented according to established specifications. 2.3. Prevailing hot and cool wind directions are identified and recorded. 2.4. Sun path for the location is identified and documented. 2.5. Building orientation is established and documented.
3. Assess building designs.	3.1. Accommodation within the building is assessed and recorded. 3.2. Effective zoning within the building is established. 3.3. Floor plan is sketched and recorded. 3.4. Suitability of design in relation to cross-ventilation and shadow lines is determined and recorded. 3.5. Impacts of ***energy efficiency design principles*** are identified and recorded for architectural and services design in accordance with state and territory legislation and the BCA.
4. Identify that energy consumption practices are incorporated into design briefs.	4.1. Energy appliances of the building and their consumption are established and recorded. 4.2. Recommended best practice to conserve energy is identified and documented in energy audits. 4.3. Selection and use of energy efficient fittings and services are determined and included in design brief. 4.4. Energy budget principles for building fabric and services are identified and applied in accordance with standard industry practice.

Required Skills and Knowledge

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret:
    - BCA
    - legislation
    - other relevant documentation
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
  - written skills to:
    - develop recommendations and strategies for the implementation of energy efficient design principles
    - report data and findings
- planning and organisational skills to collect, organise and analyse information
- technological skills to:
  - complete documentation and calculations
  - enable information gathering and analysis.

Required knowledge

Required knowledge for this unit is:

- authorities and powers of a building surveyor
- effects of fossil fuels on the atmosphere
- energy consumption relative to construction processes
- greenhouse gas emissions
- impact of construction process on the atmosphere
- impacts of national greenhouse strategy and Kyoto protocol on construction
- macro and micro climates
- nature of materials and effect on performance
- ozone depletion theories
- processes for the administration and preparation of documentation
- processes for the interpretation of reports, working drawings and specifications
- R values (overall thermal resistance) for construction material

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REQUIRED SKILLS AND KNOWLEDGE

- relevant federal, state or territory legislation and local government policy and procedures
- services design concepts
- site topography.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational management policies and procedures, including quality assurance requirements where appropriate • evaluate and report on data, findings, recommendations and strategies for the implementation of energy efficient design principles for at least one building development project and in compliance with the applicable local government authority, relevant legislation and the BCA • provide reports to appropriate body/individual as determined by the project brief.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions

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EVIDENCE GUIDE

- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability

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EVIDENCE GUIDE

and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Design projects requiring review of energy efficiencies include:

- evaluation of building designs for the purposes of applying appropriate construction methods to reduce energy consumption.

Energy efficiency design principles include:

- application and assessment of BCA performance-based solutions
- best practice to conserve energy:
  - appliance usage
  - building location and orientation
  - choice and product performance
  - compliance with legislation pertinent to conserving energy
  - living practices that maximise benefit
- climate conditions:
  - climate zones in Australia specified in BCA

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RANGE STATEMENT

- micro climates associated with a specific area
- energy consumption:
  - low energy lighting
  - solar hot water systems
  - star rated appliances
  - utilities and showerhead restriction fittings
  - window coverings and glazing
- energy efficient construction:
  - construction methods
  - efficient design briefs
  - geography and topography of site
  - location
  - materials used
  - method of application
- star rating systems:
  - Building Energy Rating Scheme (BERS) computer model
  - First Rate computer model
  - National Housing Energy Rating Scheme (NatHERS) computer model.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCSV5014A Apply building surveying procedures to residential buildings

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to assess residential buildings for compliance with building legislation.

It includes the evaluation and interpretation of plans, progressive inspection of building work, preparation of reports and compliance with legislative requirements.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to apply building surveying procedures to residential buildings within the context of relevant legislation, the Building Code of Australia (BCA) and Australian standards.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Evaluate documents submitted with an application for building approval.	1.1. Plans, specifications and structural drawings for residential buildings are ***evaluated*** for compliance with building application process and ***building surveying procedures***. 1.2. Application/proposal is evaluated against legislative requirements. 1.3. Components of the application requiring referral to other agencies or departments are identified and forwarded. 1.4. Common faults with application are identified, noted and reported to relevant parties. 1.5. Notice of decision, including approval, conditional approval or refusal, is drafted and processed according to workplace procedures.
2. Carry out inspections at various stages of building work.	2.1. Compliance of building work is checked according to schedule or at discretion, and reports are prepared promptly for appropriate parties. 2.2. Written notices for non-complying work with a full explanation and any remedial action specified, are prepared and processed according to workplace procedures. 2.3. Follow-up inspections are conducted at a suitable time to check rectified work without disruption to building progress. 2.4. Meetings are conducted with stakeholders, taking notes, preparing minutes and responding as required.
3. Prepare reports on various building types.	3.1. Analyses of residential buildings are prepared and advised. 3.2. Suitability of existing buildings are inspected and reported prior to purchase for proposed use and requirements. 3.3. Existing buildings are inspected for safety and reports are completed. 3.4. Outcome of construction work is inspected prior to occupancy and reported on.
4. Determine the compliance of building services with respect to building legislation.	4.1. Compliance of building services with building legislation is determined and reported on prior to occupancy. 4.2. Legislative requirements are interpreted and applied. 4.3. Common faults with building services are identified, researched and processed according to workplace

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ELEMENT	PERFORMANCE CRITERIA
	procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret:
    - drawings
    - legislation
    - plans and specifications
    - other relevant documentation
  - report faults to other parties and conduct meetings with stakeholders
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
  - written skills to:
    - draft notices
    - prepare reports
    - take notes and minutes
- organisational and time management skills to arrange and conduct meetings to timelines
- planning and organisational skills to collect, organise and analyse information
- problem solving skills to identify faults and problems, to use and apply data for decision making and to review meeting feedback and take appropriate action
- teamwork skills to work with diverse individuals and groups
- technological skills to:
  - complete documentation and calculations
  - enable information gathering and analysis.

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REQUIRED SKILLS AND KNOWLEDGE

Required knowledge

Required knowledge for this unit is:

- authorities and powers of a building surveyor
- nature of materials and effect on performance
- processes for the administration and preparation of documentation
- processes for the interpretation of reports, working drawings and specifications
- relevant federal, state or territory legislation, and local government policy and procedures
- research methods
- structural, design and construction principles of buildings
- terminology, definitions and hazard identification.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational management policies and procedures, including quality assurance requirements where applicable • apply building surveying procedures to produce an accurate proposal outlining the status of approval, compliance with regulations, determination of safety procedures, laws abided with, survey findings, and recommendations and strategies for at least one residential building project • provide reports to appropriate body/individual as determined by the project brief. and according to workplace procedures.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements

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EVIDENCE GUIDE

- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete

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EVIDENCE GUIDE

confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Evaluated includes:
- adherence to legislative requirements for BCA Class 1 and 10 buildings
- evaluation and interpretation of plans
- preparation of reports
- progressive inspection of building work.

Building surveying procedures include:
- mechanical, structural and electrical and other services.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSV5015A Assess structural requirements for domestic scale buildings

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to assess the structural requirements of domestic scale buildings and those of a similar loading, construction and size, such as small industrial, commercial or public buildings.

It includes the application of design concepts to the selection, positioning and sizing of all structural members and materials that form a building structure.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to assess structural requirements for domestic scale buildings within the context of relevant legislation, the Building Code of Australia (BCA) and Australian standards.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify structural requirements and loads commonly used in structural design.	1.1. ***Structural requirements*** relating to equilibrium, stability, strength, functionality, economy and aesthetics are determined in ***adherence to legislative requirements***. 1.2. Different types of loading and loading methods and the effect on structures are identified and documented in accordance with BCA, relevant Australian standards, suppliers' technical data and empirical methods.
2. Analyse the effects of force and moments on structural elements.	2.1. Force, moments and equilibrium of force and the effects on structures are identified and ***analysis*** is conducted and recorded. 2.2. Equilibrium of forces for co-planar systems in consideration of stability is identified and compared for performance.
3. Analyse properties and behaviour of structural materials.	3.1. Effect of force on materials in tension, compression, stress, strain and elasticity is identified and recorded. 3.2. Structural properties and performances are differentiated for common materials and recorded.
4. Identify section properties of structural elements and their effect on structural performance.	4.1. Cross-sectional geometry and common structural shapes are identified. 4.2. Section properties and the relationship between first and second area moments, section modules and gyration and deflection of beams are identified and compared for performance. 4.3. Section properties' values for I (moment of inertia), Z (section modulus) and R (radius) for common sections are determined using tables or standard formulas and compared for performance.
5. Compare the performance and properties of spanning elements.	5.1. Structural considerations of loaded spanning elements for bending moments, shear forces, deflection and torsion are determined and compared for performance. 5.2. Bending behaviour and performance of loaded support beams of various types, shapes, spans and loads are determined and compared for performance. 5.3. Effect that connections have upon the structural performance of beams is identified and compared for performance. 5.4. Principles of slab behaviour in relation to spans and stress distribution are identified and compared for

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ELEMENT	PERFORMANCE CRITERIA
	performance.
6. Determine performance criteria for columns.	6.1. Effect of slenderness ratio that changes in length, cross-sections, connections and materials will have on the strength of a column are determined and compared for performance. 6.2. Eccentric and axial load effect on the strength of column section and materials are determined and compared for performance.
7. Identify factors affecting design of connections between structural elements.	7.1. Transmission of forces between structural elements are determined and compared for performance. 7.2. Methods of distributing stresses in connections between structural elements are determined and compared for performance.
8. Outline how loads of various types occur and impinge on a building structure.	8.1. Differences between types of loading, including dead load, live load, wind load, earthquake load and other load, causing actions are determined and compared for performance. 8.2. Dead and live loads using BCA and relevant Australian standards are determined. 8.3. Indication of direction of wind pressures on the various surfaces of buildings specified in BCA and relevant Australian standards are determined.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret:
    - BCA

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REQUIRED SKILLS AND KNOWLEDGE

    - relevant Australian standards
    - other relevant documentation
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
  - written skills to report findings and provide reports
- numeracy skills to analyse and apply complex mathematical information
- planning and organisational skills to collect, organise and analyse information
- technological skills to:
  - complete documentation and calculations
  - enable information gathering and analysis.

Required knowledge

Required knowledge for this unit is:

- behaviour of structural members undergoing stress, strain, compression, bending or combined actions
- nature of materials and effect on performance
- processes for the interpretation of working drawings and specifications
- processes for the preparation of documentation
- relevant federal, state or territory legislation and local government policy and procedures
- research methods
- structural and design principles for buildings.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational management policies and procedures, including quality assurance requirements where applicable • assess, identify and report on findings for the design, positioning and sizing of structural members of at least one domestic scale building project or equivalent • provide reports to appropriate body/individual as determined by the project brief.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity

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EVIDENCE GUIDE

- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and

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EVIDENCE GUIDE

supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Assessment of ***structural requirements***:

- includes:
  - analysis of engineering drawings
  - evaluation of site physicality
  - identification of safe structural practices
- may require actual site visits.

Adherence to legislative requirements is limited to:

- domestic scale buildings (similar in characteristics to those of residential dwellings in terms of loading, construction and size and may include small industrial, commercial and public buildings).

Analysis includes:

- 'I' (moment of inertia) values
- base unit mass, density, velocity, acceleration, force and stress
- column changes in length, cross-sectional, restraints, material and eccentricity
- cross-sectional geometry and common structural shapes
- deflections for symmetrically loaded, simply supported timber beams of various shapes,

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RANGE STATEMENT

spans and loads
- directions of wind pressure loads
- force on materials in tension, compression, stress, strain and elasticity
- forces associated with levers identified by direction and value
- forces for co-planar non-current force systems
- load differences, including:
  - dead load
  - live load
  - wind load
  - earthquake load
- minimum bracing requirements
- removal of trusses
- restraints for use with beams
- second area moments and deflection of beams
- simple roof truss transmission force
- structural properties differentiated for common materials
- symmetrically loaded simply supported situations for:
  - bending moments
  - deflection
  - shear forces
  - torsion
- tension and compression stresses of roof members
- wind forces and wind velocity for bracing.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Co-requisite units Nil

Functional area

Functional area

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CPCCSV6001A Assess the construction of buildings up to three storeys

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to assess the construction of buildings of up to three storeys and a maximum floor area of 2000 square metres.

It includes evaluation and identification of appropriate construction methods and the identification of required standards and services according to relevant legislation, design and maintenance specifications.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to assess the construction of buildings up to three storeys within the context of relevant legislation, the Building Code of Australia (BCA) and Australian standards.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare comprehensive checklist schedule to investigate, plan and set up sites.	1.1. Relevant factors for project scheduling, investigation, planning and site establishment for buildings are analysed and determined. 1.2. Capabilities of builder's plant and equipment for single and multi-building projects are identified and documented in compliance with ***construction principles for buildings***. 1.3. Authorities' requirements and procedures to connect temporary services are identified and documented. 1.4. OHS requirements for site amenities/services and emergency safety procedures are established and documented. 1.5. Effects of the Disability Discrimination Act (DDA) regarding access for people with a disability are researched and documented.
2. Research and comply with relevant state or territory legislation and local government requirements.	2.1. Effects of relevant state or territory building and planning legislation and local government planning and building requirements are investigated, interpreted and communicated to others throughout design and construction of the specified building project. 2.2. Planning and construction effects of the BCA and the construction requirements of the various relevant Australian standards are researched and documented. 2.3. Effects of state or territory, local government and service supply authorities' regulations on design and construction are researched and documented. 2.4. Environmental issues and controls relating to the construction site are evaluated and recorded.
3. Investigate and evaluate building site establishment.	3.1. Available site services and records of the salient features of a building site are appraised and recorded. 3.2. Soil engineer assessment of foundations, test bore results and sketches of footing systems used, suited to various foundation designs, selection and behaviour in wet, dry and earthquake conditions, are interpreted. 3.3. Types, principles and construction practices of shoring, underpinning, rock anchors used in rock and soil foundations, de-watering, ground stabilisation, footing systems, basements, tanking and retaining wall construction are identified, documented and

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ELEMENT	PERFORMANCE CRITERIA
	sketched.
	3.4. Principles and practices of site establishment and different types and uses of builders' plant and equipment are identified and evaluated.
	3.5. Demolition procedures, standards and safety requirements for site preparation, including marking locations of services, providing se access and general site clearing, are identified and evaluated as appropriate.
4. Determine stages and sequencing practices for structural systems.	4.1. Stages and sequencing appropriate to the different forms of project construction are identified and described, including ***characteristics***, ***uses***, ***maintenance and selection of materials***.
	4.2. Structural systems commonly used in different forms of project construction are identified and described.
	4.3. Types, principles and relevant regulations, including BCA, construction standards and practices are identified in accordance with relevant design and construction of structural systems.
	4.4. Sub-structure of different forms of project construction from the foundation up to ground level are detailed and documented.
	4.5. Options available for fenestration design, based on bracing design, are investigated and described.
	4.6. Tilt-up construction process, application, standards and practices are identified and described in accordance with relevant design and construction of structural systems.
	4.7. Drawings of service core layouts are prepared in accordance with relevant design and construction of structural systems.
	4.8. Purposes for dimensional coordination and its benefits to the planning and construction of buildings are evaluated.
	4.9. Shop drawings used for the manufacturing of various, most commonly used structural systems are reviewed.
5. Determine requirements for scaffolding systems.	5.1. Various scaffolding systems are identified and selected in accordance with relevant legislation and Australian standards.
6. Select suitable methods for rubbish	6.1. Rubbish removal methods suitable for a specified medium/high rise building in accordance with

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ELEMENT	PERFORMANCE CRITERIA
removal from building sites.	relevant legislation and Australian standards are identified and selected.
7. Select suitable cranes and other modes of material handling.	7.1. Correct and safe methods of material handling systems are identified and selected in accordance with relevant legislation and Australian standards.
8. Identify and apply earthquake resistant construction to building.	8.1. Major building elements designed to resist earthquakes are defined. 8.2. Major structural concepts used to resist earthquakes are identified. 8.3. Applications are sketched of structural and cladding details to resist earthquakes using appropriate drawing protocol. 8.4. Factors effecting material selection and installation are nominated.
9. Evaluate construction standards and practices.	9.1. Types, construction standards and practices for the installation/application used for claddings, linings, finishes and coatings are identified and evaluated. 9.2. Detail drawings of the various types of cladding systems and their fixings are prepared in accordance with relevant design specifications. 9.3. Suitability of various partition systems for use in office landscaping and layouts are evaluated and deemed appropriate to the function of the office. 9.4. Preparation of drawings of typical office layouts and selection criteria with specific emphasis on materials choice and functional office design are investigated and deemed appropriate. 9.5. Types, principles, construction standards and practices of window, door and joinery fabrication and installation are identified and evaluated in accordance with relevant design and construction of structural systems. 9.6. Basic principles and integration of building services into the building are identified and evaluated in accordance with standard practices and service supply authority legislation. 9.7. ***Structural principles*** and the use of these principles are identified. 9.8. Types, standards and practices for the installation of the services are identified and described in accordance with different forms of project construction.

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ELEMENT	PERFORMANCE CRITERIA
10. Plan for continuing maintenance on a construction project.	10.1. Design principles required for consideration to accommodate and facilitate ongoing maintenance are identified and documented. 10.2. Key services areas of a building project requiring ongoing maintenance are nominated and described. 10.3. Approaches for entering into maintenance agreements for the provision of subsequent services are identified and documented. 10.4. Responsibilities of the various parties involved in a building project during the construction, defects liability and service life periods are identified and documented.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, follow instructions, respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - communicate legislation and local government requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret:
    - BCA
    - plans, specifications and drawings
    - other relevant documentation
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
  - written skills to:
    - document and record issues regarding site establishment, requirements, construction methods and maintenance
    - prepare checklist schedule

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REQUIRED SKILLS AND KNOWLEDGE

- evaluate own actions to make judgements about performance and necessary improvements
- numeracy skills to analyse and apply complex mathematical information
- organisational and time management skills to arrange and conduct meetings to timelines
- planning and organisational skills to collect, organise and analyse information
- teamwork skills to work effectively with others.

Required knowledge

Required knowledge for this unit is:

- access requirements for people with a disability and the requirements of the DDA with regard to access
- authorities and powers of a building surveyor
- design and construction principles of buildings
- nature of materials and effect on performance
- processes for the administration and preparation of documentation
- processes for the interpretation of reports, working drawings and specifications
- relevant federal, state or territory legislation and local government policy and procedures
- research methods.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational management policies and procedures, including quality assurance requirements where appropriate • apply the principles of construction, standards and services, design and maintenance specifications, correct terminology; and the associated reporting of data, findings, recommendations and strategies for at least one commercial, industrial or residential building project or equivalent in compliance with relevant legislation • provide reports to appropriate body/individual as determined by the project brief.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements

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EVIDENCE GUIDE

- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete

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EVIDENCE GUIDE

confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Scheduling, ***investigation***, ***planning and site establishment*** include:

- builders' construction plant and equipment
- contractual arrangements relevant to state or territory building control legislation
- temporary builders' site services.

Buildings are limited to:

- three storeys
- a maximum floor area not exceeding 2000 square metres.

Construction principles for buildings include:

- adherence to legislative requirements for Building Code 7 of Australia Class 2 to 9 buildings
- design specifications
- evaluation and identification of construction methods
- maintenance specifications

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RANGE STATEMENT

	• standards and services in compliance with relevant legislation.
Characteristics, uses, maintenance and selection of materials include:	• barriers • cost effectiveness • cranes and hoists • dangerous materials • environmental safety • evaluation and assessment of new materials • gantries • installation • manufacture • new technologies • recycling • rubbish removal • scaffolding systems • site shed locations • testing • transport problems and restrictions, including hoardings.

Types, principles and relevant regulations, including BCA, construction standards and practices include:	• cladding systems, such as:
	  • aluminium
	  • brick and paving for pedestrians and vehicular traffic
	  • brickwork and blockwork
	  • bronze
	  • coated steel
	  • curtain wall
	  • fibre reinforced cement
	  • glass
	  • glass-reinforced polyester resin (GRP)
	  • granite
	  • in situ concrete (i.e. off-the-form or textured)
	  • marble
	  • metal and epoxy resin laminates
	  • non-load bearing
	  • permanent formwork
	  • plastics
	  • pre-cast concrete (load bearing)

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RANGE STATEMENT

- sandwich panels
- stainless steel
- tiles and mosaics
- veneer facings (sandstone)

- dimensional coordination and general principles of:
  - component dimensions
  - controlling dimensions
  - joints and tolerances between control joints and construction joints (vertical and horizontal)
- footing systems, such as:
  - car park construction
  - de-watering
  - grillage
  - ground stabilisation
  - grouted anchors
  - mechanical anchors
  - pad and pedestal footings
  - pier and beam (bored piers and driven piles)
  - piles and cap
  - retaining walls
  - shoring
  - tanking and basement construction
  - underpinning
- plant and equipment, such as:
  - back hoes
  - concrete kibbles and skip
  - concrete pumps
  - crane and grab cranes
  - gantries and similar overhead protection systems
  - generators
  - hoardings
  - hoists
  - pumps, including submersible pumps
  - rock breakers
  - scaffolding

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RANGE STATEMENT

- shovels and buckets
- skimmers and scrapers
- temporary lighting systems
- temporary support systems
- well points

- service core construction, such as:
  - ceilings
  - damp proof courses
  - demountable formwork
  - flashings
  - jump formwork
  - membranes
  - openings (floors and roofs)
  - sarking and insulations
  - slip formwork
  - wall and floor cladding
  - walls
- services, such as:
  - communication systems
  - electricity
  - fire services, including fire hydrants and fire hose reels
  - gas
  - heating and cooling systems
  - mechanical ventilation
  - roof water plumbing and drainage
  - sewerage/septic or similar systems of plumbing and drainage
  - smoke control systems
  - sprinklers and similar systems
  - surface drainage
  - telephone
- structural fit-out systems and fixing, such as:
  - cupboard joinery and finishes
  - floor
  - mouldings
  - wall and ceiling finishes and coatings
  - wall and ceiling linings

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RANGE STATEMENT

	• wet area floor detailing • structural openings, such as: • braced frame and core • diagonal bracing superimposed over frame or tube structure. • door types for internal and external use • fenestration design based on bracing design • fire doors • rigid frame and core • timber and aluminium-framed windows and doors • tube structure • vehicle access doors • structural systems, such as: • structural floor systems • structural roof systems • structural wall systems • termite control: • which can be mechanical and chemical • may include other control systems.
Structural principles relate to:	• loads and forces • stresses and strains applied to: • arches • beams • braces • columns • concrete floor slabs • load-bearing walls • roof frames, including trusses • structural footings • ties.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSV6002A Produce working drawings for buildings up to three storeys

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to read and interpret plans and specifications and to undertake architectural drafting of buildings up to three storeys and a maximum floor area not exceeding 2000 square metres.

It includes the production of two and three-dimensional drawings in accordance with standard industry drawing practice and to a level suitable for building permit approval.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to produce working drawings for buildings up to three storeys within the context of relevant legislation, the Building Code of Australia (BCA) and Australian standards.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Read and interpret plans and specifications.	1.1. Interrelationships between ***plans and specifications*** are identified and interpreted. 1.2. Location and interpretation of key information are identified according to drawings and specifications. 1.3. Drawing responses are identified in accordance with ***relevant Australian standards***. 1.4. Application of all documentation is identified and interpreted.
2. Produce draft working drawings.	2.1. Requirements and criteria for draft working drawings are identified and interpreted. 2.2. ***Draft working drawings*** with annotated construction details are completed in accordance with BCA, relevant state or territory legislation and Australian standards.
3. Produce a set of working drawings for a factory and office complex.	3.1. Requirement and criteria for working drawings are identified and interpreted. 3.2. Working drawings are based on research and are in accordance with relevant legislation including the BCA and Australian standards. 3.3. ***Building drawings*** include detailed specifications and are completed to architectural conventions and demonstrate consideration of creativity and innovation. 3.4. Documentation is compiled to satisfy approval requirements.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, follow instructions, respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:

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REQUIRED SKILLS AND KNOWLEDGE

- enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
- read and interpret:
  - BCA
  - legislation
  - plans, specifications and drawings
  - relevant Australian standards
  - other relevant documentation
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication
- creative and innovative approaches in relevant drawing tasks
- numeracy skills for the production of drawings
- teamwork skills to work effectively with others.

Required knowledge

Required knowledge for this unit is:

- drafting and drawing protocols
- processes for the administration and preparation of documentation
- processes for the interpretation of reports, working drawings and specifications
- relevant federal, state or territory legislation and local government policy and procedures
- structural, design and construction principles of buildings.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational management policies and procedures, including quality assurance requirements where applicable • produce two and three-dimensional drawings for buildings up to three storey and not exceeding a maximum floor area of 2000 square metres, including at least one orthographic, one isometric and one perspective drawing • provide drawings to appropriate body/individual as determined by the project brief.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions

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EVIDENCE GUIDE

- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability

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EVIDENCE GUIDE

and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Plans and specifications:

- plans include:
  - building plans
  - details
  - sections and three-dimensional sketches relating to main components of construction
  - finishes and specification notes to a standard suitable for building approval
- specifications include:
  - structural engineering drawings
  - soil tests
  - shop drawings (steel fabrication)
  - survey plans and levels plans for temporary structures and works.

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RANGE STATEMENT

Relevant Australian standards include:	• AS1100 Architectural drawing and supplement • AS1720 Timber structures • AS3600 Concrete structures • AS3700 Masonry • AS4100 Steel structures.
Draft working drawings include:	• area analysis • BCA Class 2 to 9 buildings • computer-generated or paper-based presentations • construction notes • details • elevations • floor plans • general notes • location or neighbouring buildings • plan and specification interpretation • projections • sections • services • site plans • two and three-dimensional drawings • up to three storey buildings not exceeding a floor area of 2000 square metres.

Building drawings:	• banks and landscaping
	• base structure - timber and masonry
	• certificate of title to land
	• complex roof and wall shapes
	• composite construction (e.g. steel and timber)
	• conversion of plans and specifications to architectural and building detail
	• drawing protocols, including:
	  • abbreviations
	  • legends
	  • lettering standards
	  • numbering
	  • paper size
	  • scale
	  • standard units of measurement
	  • symbols
	• electrical connections plan

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RANGE STATEMENT

- excavation cut and fill
- flashings and box gutters
- general plumbing services plan
- glazing, including window and door schedules
- insulation and sarking
- internal and external wall claddings
- joinery
- land surveyor plans
- large span timber beams and connections, including glue laminated beams
- levels and contours
- research journal in accordance with project aims, comprising:
  - photographs
  - record of site visits
  - sections
  - three-dimensional sketches
- retaining walls
- roof construction
- sewerage connection and easement plan
- soil classification and tests
- stairs
- stormwater connection and easements plan
- timber and masonry
- upper floor construction
- wall construction.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Co-requisite units Nil

Functional area

Functional area

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CPCCSV6003A Assess construction faults in buildings up to three storeys

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to identify construction faults in buildings up to three storeys and not exceeding a maximum floor area of 2000 square metres.

It includes the identification and evaluation of construction problems and determination of alternative methods in accordance with legislative requirements.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to assess construction faults in buildings up to three storeys within the context of relevant legislation, the Building Code of Australia (BCA) and Australian standards.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and analyse construction faults on building sites up to three storeys.	1.1. Information is collected relating to the specific ***building construction*** problem. 1.2. Construction problem for the ***type of construction*** is identified relative to original specifications and ***building material***. 1.3. ***Construction faults*** are communicated to appropriate personnel and documented in accordance with standard work practices. 1.4. Problem solving techniques are used, typical faults and problems are identified and action to rectify is deemed to be in accordance with the BCA.
2. Identify construction techniques, methods and materials nominated in relevant legislation in the BCA and Australian standard.	2.1. Building terminology is used accurately in the communication of issues. 2.2. Working drawings and specifications are examined and existing or designed construction problems are identified and evaluated. 2.3. Alternative methods and materials to meet construction aims and objectives are prepared to the specification nominated in relevant legislation in the BCA and ***Australian standards***. 2.4. Detailed sketches of available alternative methods and materials available to meet the construction aims and objectives are prepared to specification.
3. Resolve construction faults in construction techniques and methods.	3.1. Project working drawings and specifications identifying existing or designed construction problems are evaluated. 3.2. Report identifying available alternative methods and materials to meet the construction aims and objectives is prepared to specification. 3.3. Detailed sketches of available alternative methods and materials available to meet the construction aims and objectives are prepared to specification.
4. Resolve construction faults using alternative construction methods.	4.1. Suitable methods from available alternative solutions are evaluated and recommended to resolve the problem in accordance with project aims and objectives. 4.2. Selected methods are integrated into the project in order to resolve the construction problems in accordance with project aims. 4.3. Evaluation of available alternative forms of construction is carried out in accordance with project

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ELEMENT	PERFORMANCE CRITERIA
	aims.
5. Resolve common on-site faults with building materials.	5.1. Commonly occurring on-site problems with building materials and their causes are evaluated. 5.2. Corrective and preventative measures are identified and implemented.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - communicate construction problem to appropriate personnel
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - evaluate own actions to make judgements about performance and necessary improvements
  - read and interpret:
    - Australian standards
    - BCA
    - legislation
    - reports
    - specifications
    - working drawings
  - use accurate terminology
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
  - written skills to:
    - to document construction problem
    - report identifying alternative methods/materials
- teamwork skills to work effectively with others.

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REQUIRED SKILLS AND KNOWLEDGE

Required knowledge

Required knowledge for this unit is:

- access requirements for people with a disability and the requirements of the Disability Discrimination Act (DDA) with regard to access
- authorities and powers of a building surveyor
- design and construction principles of buildings
- nature of materials and effect on performance
- processes for the administration and preparation of documentation
- processes for the interpretation of reports, working drawings and specifications
- relevant federal, state or territory legislation and local government policy and procedures
- research methods.
- terminology, definitions and hazard identification.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational management policies and procedures, including quality assurance requirements where appropriate • assess construction faults in buildings, determine a rectification strategy and consider alternative construction methods; and the associated reporting of data, findings, recommendations and strategies for at least one residential building project and one commercial building project or equivalent in compliance with relevant legislation • provide reports to appropriate body/individual as determined by the project brief.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements

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EVIDENCE GUIDE

- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete

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EVIDENCE GUIDE

confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Building construction includes:
- design specifications
- evaluation and identification of construction faults and the determination of alternative methods
- maintenance specifications and adherence to legislative requirements for BCA Class 2 to 9 buildings
- standards and services in compliance with relevant legislation.

Type of construction includes:
- residential, industrial and commercial medium rise buildings
- wide span buildings, limited to three storeys and a maximum floor area not exceeding 2000 square metres.

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RANGE STATEMENT

Building material includes:	• concrete • masonry and autoclaved aerated concrete (AAC) • steel-framed • timber-framed.
Construction faults include:	• installation • refurbishing • renovation • restoration.
Australian standards include:	• AS1288 Installation of glass in buildings • AS1684 Residential timber framed construction • AS2050 Fixing of roof tiles • AS2180 Metal rainwater goods, selection and installation • AS2208 Safety glazing materials for use in buildings • AS3500 National plumbing • AS3600 Concrete structures • AS3660 Protection of buildings from subterranean termites • AS3700 Masonry • AS3740: 2004 Waterproofing of wet areas in residential buildings • AS4349 Inspection of buildings.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCSV6004A Apply footing and geomechanical design principles to buildings up to three storeys

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to apply footing and geomechanical design principles to buildings up to three storeys and not exceeding a maximum floor area of 2000 square metres.

It includes the identification, classification, calculated positioning and sizing of all structural footing that form foundation components of the project.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to apply footing and geomechanical design principles to buildings up to three storeys within the context of relevant legislation, the Building Code of Australia (BCA) and Australian standards.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Evaluation of slope instability.	1.1. Effect of soil and rock strength on slope instability is evaluated and recorded. 1.2. Modes and mechanics of slope instability are researched and documented. 1.3. Methods to stabilise slopes are researched and documented according to ***standard specifications***.
2. Analyse retaining wall requirements according to the structure.	2.1. Retaining structures and systems suitable for various situations and ***soil types*** are identified adhering to ***legislative requirements*** and the ***application of footings and geomechanical principles***. 2.2. Active and passive earth pressure and water pressure applicable to various retaining structures is determined. 2.3. Earth pressures on a gravity retaining wall are determined and analysed according to required structure for stability.
3. Determine footing design requirements according to situation.	3.1. Net safe bearing pressure for a ***footing*** on a clay soil is calculated without error. 3.2. Allowable bearing pressures for footings on granular soil from in-site penetration test results are calculated without error. 3.3. Long-term consolidation effects for footings on clay soils are analysed and recorded. 3.4. Behaviour of footings on soils under earthquake conditions is researched and documented.
4. Determine requirements for compaction of soil fill.	4.1. Maximum ***soil properties***, including dry density and moisture content relationship, for a soil is analysed and recorded. 4.2. Techniques for compaction control and performance of compaction plant in consideration of ***maintenance requirements*** are identified and documented.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

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REQUIRED SKILLS AND KNOWLEDGE

Required skills

Required skills for this unit are:

- ability to recognise procedures, follow instructions, respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - evaluate own actions to make judgements about performance and necessary improvements
  - read and interpret:
    - BCA
    - reports
    - specifications
    - working drawings
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
  - written skills to report evaluations
- numeracy skills to interpret and apply complex mathematical information
- teamwork skills to work effectively with others.

Required knowledge

Required knowledge for this unit is:

- design principles and concepts for footings
- geomechanical engineering principles
- nature of materials and effect on performance
- nature of soil mechanics and effect of performance in problem soils
- processes for the interpretation of working drawings and specifications
- processes for the preparation of documentation
- relevant federal, state or territory legislation and local government policy and procedures
- research methods
- structural design principles in buildings.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational management policies and procedures, including quality assurance requirements where applicable • assess footing requirements, for at least one commercial building project or equivalent, which includes advice on positioning and sizing • analyse and report on the soil types and properties for at least two building projects or equivalent • provide reports to appropriate body/individual as determined by the project brief.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions

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EVIDENCE GUIDE

- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability

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EVIDENCE GUIDE

	and applied knowledge • all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed. Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Standard specifications include industry-standard specifications and may be:	• detailed specifications, addressing specific components such as structural or other requirements • developed specifications • preliminary and outline specifications.
Soil types include:	• clay soils • rock • saturated granular soils.
Legislative requirements are limited to:	• buildings up to three storeys and not exceeding a maximum floor area of 2000 square metres • adhering to legislative requirements for BCA relating to Class 2 and 9 buildings.
Application of footings and geomechanical principles	• assessment of geomechanical and footing design for residential and commercial

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RANGE STATEMENT

includes:	buildings • identification of the nature, composition, classification and distribution of soil type.
Footing must be suitable for:	• building type • site conditions.
Soil properties include:	• bulk density • degree of saturation • dry density • moisture content • porosity • void ratio.
Maintenance requirements include identification of:	• ground water • surface water • tree root systems.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSV6005A Evaluate services layout and connection methods for residential and commercial buildings up to three storeys

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to evaluate the layout of services and connection methods for residential and commercial buildings up to three storeys and not exceeding a maximum floor area of 2000 square metres.

It includes the evaluation of cold and hot water supply, sewerage layout, electric and electronic installation requirements, smoke and fire preventative systems. It requires compliance with relevant legislation, Australian standards and the Building Code of Australia (BCA).

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to evaluate services layout and connection methods for residential and commercial buildings up to three storeys.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Evaluate layouts of water supply for general and fire fighting use.	1.1. Water supply, connection and layout are identified, evaluated and recorded for ***residential and commercial building projects requiring evaluation of services layout*** connected to a town supply or a tank storage supply in accordance with BCA, relevant legislation and Australian standards and the ***application of evaluative and corrective methods for services' layout***. 1.2. Installation of water ***services*** supplying fire hydrants, fire hose reels and fire sprinkler systems is identified, evaluated and recorded in accordance with BCA, relevant legislation and Australian standards and ***adherence to legislative requirements***. 1.3. Interconnection of water tanks for fire services is emulated in the intent of non-return to original tanks and the results are evaluated.
2. Evaluate sewerage and drainage disposal methods and their layouts.	2.1. Sewerage connection and layout are identified, evaluated and recorded in accordance with the BCA, relevant legislation and Australian standards. 2.2. Connection methods of main drains to local authority sewers for open ground, and within buildings taking up the whole site, are identified, evaluated and recorded. 2.3. Disposal of sewerage from fixtures situated below the level of the local authority sewer for both domestic and commercial buildings are evaluated in accordance with BCA, relevant legislation and Australian standards. 2.4. Methods for disposing of stormwater drainage systems are evaluated and documented in accordance with the BCA, relevant legislation and Australian standards. 2.5. Design and installation of stormwater drainage systems are evaluated and documented in accordance with BCA, relevant legislation and Australian standards.
3. Evaluate commonly used methods for smoke hazard management, mechanical ventilation and	3.1. Terms used in mechanical ventilation are clearly recorded stating how ventilation, volume, velocity and content may be controlled. 3.2. Methods of mechanical ventilation, air distribution and smoke hazard management are identified, evaluated and recorded in accordance with BCA,

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ELEMENT	PERFORMANCE CRITERIA
air-conditioning, methods of air filtration and system layout.	relevant legislation and Australian standards. 3.3. Air conditioning and mechanical ventilation and basic elements of air conditioning are identified, evaluated and documented, including the function of air conditioning and applications for various types of occupancy in buildings.
4. Evaluate hot water systems and factors affecting selection.	4.1. Hot water systems are identified and evaluated according to design factors, types of system, height of installation, area to be serviced, number of outlets and available energy sources. 4.2. Operating principles of various types of hot water systems are evaluated and documented.
5. Identify natural lighting for varying situations and evaluate suitable lighting fixtures for a range of operations.	5.1. Natural lighting and general aims of design are identified in accordance with authorities and governing regulation requirements. 5.2. Artificial lighting and types of light sources are compared to recommended service luminance for various service situations in accordance with BCA, relevant legislation and Australian standards.
6. Evaluate fire fighting and fire detection services.	6.1. Authorities involved in plan perusal and site inspection for the various building classifications and their roles and functions are identified. 6.2. Requirements for sprinkler systems, fire hydrants and fire hoses for the various building classifications are identified and evaluated in accordance with BCA, relevant legislation and Australian standards. 6.3. Fire detection and alarm systems are identified and evaluated in accordance with BCA, relevant legislation and Australian standards.
7. Determine the requirements for general electrical and electronic service installation.	7.1. Electrical supply authorities and the relevant legislation are identified and recorded. 7.2. Procedures for electrical supply and connection to site are documented. 7.3. Electrical design and provision for services and electronic cabling are identified, evaluated and recorded. 7.4. Design and installation of emergency warning systems, emergency lighting and exit signage systems are evaluated and recorded in accordance with the BCA and relevant Australian standards.
8. Evaluate methods for vertical transportation	8.1. Methods of vertical transportation are identified, evaluated, recorded and sketched in accordance with

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ELEMENT	PERFORMANCE CRITERIA
and layout.	BCA, relevant legislation and Australian standards.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, follow instructions, respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - evaluate own actions to make judgements about performance and necessary improvements
  - read and interpret:
    - Australian standards
    - BCA
    - legislation
    - specifications
    - working drawings
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
  - written skills to report evaluations and record requirements
- numeracy skills to calculate workplace requirements
- teamwork skills to work effectively with others.

Required knowledge

Required knowledge for this unit is:

- design concepts and principles in relation to service installations
- general services installation terminology, definitions, installation methods and hazards
- nature of materials and effect on performance
- processes for the interpretation of working drawings and specifications
- processes for the preparation of documentation

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REQUIRED SKILLS AND KNOWLEDGE

- relevant federal, state or territory legislation and local government policy and procedures
- research methods
- terminology and methods of roof construction used for daylight transmission
- terminology and methods used in artificial lighting
- terminology with reference to items and services that may be used in plumbing, sewerage and drainage systems
- terminology with reference to vertical transportation.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- comply with OHS regulations applicable to workplace operations
- apply organisational management policies and procedures, including quality assurance requirements where applicable
- evaluate the services layout, connection methods and rectification actions for at least one residential and one commercial building project or equivalent, which includes advice on hot and cold water supply, sewerage layout, electrical and electronic installation lighting systems, vertical transportation requirements, and smoke and fire detection and prevention systems
- provide reports to appropriate body/individual as determined by the project brief.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the

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EVIDENCE GUIDE

	mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at

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EVIDENCE GUIDE

the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Residential and commercial building projects requiring evaluation of services layout include:

- processing of applications
- project milestones
- provision of site access/facilities
- work schedules.

Application of evaluative and corrective methods for services' layout includes:

- electric and electronic installations
- hot and cold water supply
- natural lighting options
- sewerage layout
- smoke and fire preventative systems
- smoke hazard management
- ventilation and air conditioning
- vertical transportation.

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RANGE STATEMENT

Services include:

- firefighting services, such as:
  - fire and smoke detection and alarm systems (BCA deemed-to-satisfy [DTS] provisions)
  - fire hose reels and fire extinguishers
  - fire hydrants
  - installation of fire stopping and fire collars
  - sprinkler systems (BCA DTS provisions)
- general electric and electronic service systems, including:
  - electrical supply authorities connection to site and distribution facilities (switch room and sub-stations)
  - type of service (emergency power and alternative power sources)
- categories of cabling:
  - computers
  - data
  - emergency lighting and exit signage systems
  - emergency warning and intercommunication systems
  - fire stopping
  - layout of equipment for telephones
  - lift controls and power supplies
  - repair and extension
  - service system safeguards
  - service systems access for maintenance
  - telecommunications connection to site and distribution facilities
- hot water systems, covering:
  - area to be serviced
  - height of installation
  - number of outlets and energy sources available
  - type of occupancy
  - type of system
- lighting systems, covering:
  - brightness
  - emergency and exit signage systems

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RANGE STATEMENT

- intensity
- lifespan and installation of fire stopping
- locations for installation
- natural and artificial lighting
- reflections
- terms, including control of glare

- mechanical ventilation
- air-conditioning and air filtration, such as:
  - air conditioning applications
  - air distribution, including mechanical ventilation requirements for enclosed car parks
  - air filtration, including air filters
  - air intake systems
  - ducting and main filter types
  - fire dampers
  - fume discharge systems
  - installation of fire stopping
  - smoke control and exhaust systems
  - warm water and cooling towers
- sewerage connection, such as:
  - graded or vertical discharge pipes
  - inspection shafts and overflow relief gullies (ORGs)
  - local authority sewerage drainage system
  - septic or biochemical treatment unit
- specialised services for:
  - hospitals
  - laboratories
  - smart buildings
- stormwater, covering:
  - connection to local government water drains
  - design
  - downpipes and unground or concealed piping
  - installation and disposal
  - location and construction requirements for eaves and box gutters
  - size

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RANGE STATEMENT

	• use of soakage pits and on-site water detection systems • vertical transportation systems, such as: • escalators • hoists and pedestrian movers • lifts • water supply, such as: • single and two stage pumping for multi-function and single function connected services • tank storage supply relative to the public water supply and reservoir heights • town supply.
Adherence to legislative requirements:	• is limited to residential and commercial buildings up to three storeys and not exceeding a maximum floor area of 2000 square metres • BCA requirements for Class 2 and 9 buildings.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCSV6006A Evaluate the use of concrete for residential and commercial buildings up to three storeys

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to evaluate and select concrete for commercial and residential buildings of up to three storeys and a maximum floor area of 2000 square metres.

This unit relates primarily to the selection, maintenance and repair of concrete as a fundamental building material in accordance with the Building Code of Australia (BCA).

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to evaluate the use of concrete for residential and commercial buildings up to three storeys within the context of relevant legislation, the BCA and Australian standards.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Analyse properties, characteristics, constituents and mix design of concrete.	1.1. Plastic concrete properties are stated and documented in consideration of ***concrete types, properties and characteristics***. 1.2. Hardened concrete properties are stated and described. 1.3. Types of hydraulic cement are listed. 1.4. Properties and uses of cements are listed and described. 1.5. Hydration process is recorded. 1.6. Sources of aggregate are listed and properties of each are recorded. 1.7. Effects of impurities are recorded. 1.8. Manufacture and testing of concrete is identified, ***evaluated*** and recorded in accordance with appropriate Australian standards.
2. Assess the requirements for concrete handling, placement, compaction, finishing and curing methods.	2.1. Effects of site access on the selection and distribution methods listed are documented. 2.2. Methods of distribution of concrete are listed and recorded. 2.3. Correct placement methods for level slabs, sloping slabs and vertical walls are recorded. 2.4. Reasons and effects of compaction on both plastic and hardened concrete are identified and listed. 2.5. Immersion, surface and form vibration are compared and recorded. 2.6. Causes of surface defects during concrete placement and compaction are identified and recorded. 2.7. Finishing process and surface treatments to slab concrete are compared and documented. 2.8. Type of curing methods and detrimental effects of poor or no curing are identified and recorded.
3. Identify concrete faults and repair methods.	3.1. Live and dormant cracks are identified and reported. 3.2. Repair methods for cracked concrete are established and reported. 3.3. Causes of concrete cancer are identified and recorded. 3.4. Repair methods for concrete cancer are established and reported. 3.5. Diagnosis of faults in concrete are identified and

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ELEMENT	PERFORMANCE CRITERIA
	recorded.
4. Assess the effect of fire on concrete.	4.1. Detrimental effects of fire and heat on reinforced concrete are documented. 4.2. Properties of concrete as an insulator to steel are documented. 4.3. Fire test results are used to determine behavioural performance of concrete in fire. 4.4. Methods of fire protection to concrete elements are recorded. 4.5. Methods of repair to fire damaged concrete are identified and reported.
5. Identify environmental issues and new technologies that affect concrete.	5.1. Environmental impact on the use of concrete in buildings relating to sustainability and supply of materials, cost, life cycle of concrete, thermal mass of concrete and recycling is documented. 5.2. New technologies in concrete are recorded. 5.3. Performance characteristics of concrete in fire resistant construction are identified and documented in accordance with acceptable standards of practice.
6. Determine cost-effectiveness and environmental issues when dealing with recycled materials.	6.1. Cost-effectiveness of using recycled materials and related environmental considerations are identified and selected in accordance with acceptable standards of practice.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, follow instructions, respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and

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REQUIRED SKILLS AND KNOWLEDGE

confirm requirements, share information, listen and understand

- evaluate own actions to make judgements about performance and necessary improvements
- read and interpret:
  - Australian standards
  - BCA
  - legislation
  - other relevant documentation
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication
- written skills to:
  - provide an evaluation
  - report data, findings, recommendations and strategies
- numeracy skills to calculate workplace requirements
- teamwork skills to work effectively with others.

Required knowledge

Required knowledge for this unit is:

- authorities and powers of a building surveyor
- nature of materials and effect on performance
- processes for the administration and preparation of documentation
- processes for the interpretation of reports, working drawings and specifications
- relevant federal, state or territory legislation and local government policy and procedures
- research methods
- structural and design principles for buildings.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational management policies and procedures, including quality assurance requirements where appropriate • evaluate the choice and application of concrete and its subsequent maintenance; and associated reporting of data, findings, recommendations and strategies for at least one commercial and one residential building project or equivalent in compliance with relevant legislation • provide reports to appropriate body/individual as determined by the project brief.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions

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EVIDENCE GUIDE

- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability

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EVIDENCE GUIDE

and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Concrete types, properties and characteristics include:

- admixtures:
  - air entraining agents
  - set controlling types
  - water reducing types
  - water reducing and set controlling types
- building types:
  - bridge and pier construction
  - concrete column or wall ten metres high
  - concrete skeleton and slabs
  - slab on ground floor
- curing methods:
  - accelerated curing
  - continuously wetting concrete
  - impermeable membrane curing

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RANGE STATEMENT

	• effects of weather:
	  • hot and cold
	  • windy
	• mix design:
	  • aggregate grading and first principles
	  • reinforced concrete design principles using steel wire and fibres
	  • selected applications using statistics.

Evaluated includes:	• environmental considerations and adherence to legislative requirements for BCA Class 2 to 9 buildings.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSV6007A Assess structural requirements for buildings up to three storeys

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to assess the structural requirements of buildings up to three storeys and with a maximum floor area not exceeding 2000 square metres.

It includes the application of design concepts to the selection, positioning and sizing of all structural members and materials that form a building structure.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to assess structural requirements for buildings up to three storeys within the context of relevant legislation, the Building Code of Australia (BCA) and Australian standards.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify structural requirements and loads commonly used in structural design.	1.1. Assessment of ***structural requirements*** relating to equilibrium, stability, strength, functionality, economy and aesthetics is undertaken. 1.2. Different types of loading and unloading methods and the effect on structures are identified and documented in accordance with BCA, relevant Australian standards, suppliers' technical data and empirical methods and ***adherence to legislative requirements for BCA Class 2 to 9 buildings***.
2. Analyse effects of force and moments on structural elements.	2.1. Force, moments and equilibrium of force and the effects on structures are identified and recorded. 2.2. Equilibrium of forces for co-planar systems in consideration of stability is identified and compared for performance.
3. Analyse properties and behaviour of structural materials.	3.1. Effect of force on materials in tension, compression, stress, strain and elasticity is identified and recorded. 3.2. Structural properties and performances are differentiated for common materials and recorded.
4. Identify section properties of structural elements and their effect on structural performance.	4.1. Cross-sectional geometry and common structural shapes are identified. 4.2. Section properties and the relationship between first and second area moments, section models and gyration and deflection of beams are identified and compared for performance. 4.3. Section properties' values for I (moment of inertia), Z (section modulus) and R (radius) for common sections are determined using tables or standard formulas and compared for performance.
5. Compare performance and properties of spanning elements.	5.1. Structural considerations of loaded spanning elements for bending moments, shear forces, deflection and torsion are determined and compared for performance. 5.2. Bending behaviour and performance of loaded support beams of various types, shapes, spans and loads are determined and compared for performance. 5.3. Effects that connections have upon the structural performance of beams are identified and compared for performance. 5.4. Principles of slab behaviour in relation to spans and stress distribution are identified and compared for performance.

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ELEMENT	PERFORMANCE CRITERIA
6. Compare performance criteria for columns.	6.1. Effect of slenderness ratio that changes in length, cross-sections, connections and materials will have on the strength of a column is determined and compared for performance. 6.2. Eccentric and axial load effect on the strength of column section and materials are determined and compared for performance.
7. Compare methods of stress distribution in connections between structural elements.	7.1. Transmission of forces between structural elements are identified and interpreted. 7.2. Methods of distributing stresses in connections between structural elements are identified and compared for performance.
8. Determine how loads of various types occur and impinge on a building structure.	8.1. Differences between ***types of loading***, including dead load, live load, wind load, earthquake load and other load, causing actions are determined and compared for performance. 8.2. Dead loads are determined using BCA and relevant Australian standards. 8.3. Indication of direction of wind pressures on the various surfaces of buildings specified in BCA and relevant Australian standards are determined.
9. Evaluate design of high performance structural elements.	9.1. Factors that determine the form of long span structural elements, including bending movement, deflection and shear forces, are researched, considered and evaluated. 9.2. Performance in ***high performance structural elements*** is identified and evaluated. 9.3. ***Use of steel to reinforce concrete*** is investigated and evaluated and the outcomes or results are recorded.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, follow instructions, respond to change and

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REQUIRED SKILLS AND KNOWLEDGE

contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - evaluate own actions to make judgements about performance and necessary improvements
  - read and interpret:
    - BCA
    - legislation
    - relevant Australian standards
    - other relevant documentation
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
  - written skills to report findings and provide reports
- numeracy skills to analyse and apply complex mathematical information
- teamwork skills to work effectively with others.

Required knowledge

Required knowledge for this unit is:

- behaviour of structural members undergoing stress, strain, compression, bending or combined actions
- grading processes and grade markings used to categorise timber and timber products
- nature of materials and effect on performance
- processes for the interpretation of working drawings and specifications
- processes for the preparation of documentation
- relevant federal, state or territory legislation and local government policy and procedures
- research methods
- structural and design principles for buildings.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational management policies and procedures, including quality assurance requirements where applicable • assess, identify and report on findings for the design, positioning and sizing of structural members of at least one three storey building project or equivalent • provide reports to appropriate body/individual as determined by the project brief • apply design principles relating to performance of structural members.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying

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EVIDENCE GUIDE

	safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

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EVIDENCE GUIDE

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Assessment of ***structural requirements***:

- includes:
  - analysis of engineering drawings
  - evaluation of site physicality
  - identification of safe structural practices
- may require actual site visits.

Adherence to legislative requirements for BCA Class 2 to 9 buildings is limited to:

- three storey buildings
- not exceeding a maximum floor area of 2000 square metres.

Types of loading include:

- static
- dead
- dynamic
- earthquake
- settlement
- snow
- thermal.

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RANGE STATEMENT

High performance structural elements include:	• castellated beams • connections • fire resistance • laminated beams • prestressed beams and slabs • trusses • waffle slabs.
Evaluation of ***use of steel to reinforce concrete*** includes:	• bond stress and development length • carry over movements • compression reinforcement • eccentric loading • location of steel in relation to shear stress • location of steel in relation to tensile stress • reinforcement ratio.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSV6008A Apply building codes and standards to buildings up to three storeys

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to ensure the building process complies with the Building Code of Australia (BCA) and relevant Australian standards.

It applies specifically to buildings up to three storeys and not exceeding a maximum floor area of 2000 square metres.

It includes the evaluation and interpretation of building requirements, classification of buildings according to BCA criteria, and identification of various strategies for compliance.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to apply building codes and standards to buildings up to three storeys within the context of the relevant legislation, the BCA and Australian standards.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Analyse the purpose and basic intent of the BCA.	1.1. Objectives of the BCA are analysed for construction in residential and commercial buildings. 1.2. Conditions of the BCA and the purpose of the respective components are evaluated and documented for relevant ***building categories*** and ***building surveying procedures***. 1.3. Deemed-to-satisfy (DTS) concept for construction to meet BCA requirements is evaluated and documented.
2. Locate and interpret code or standard requirements that are applicable to particular projects.	2.1. Clauses from the BCA that apply to particular projects are identified and recorded. 2.2. Prescriptive requirements of relevant BCA clauses are determined. 2.3. Standards that are referenced in the BCA are identified and recorded. 2.4. Special requirements that may apply to specific areas are identified and recorded.
3. Classify buildings.	3.1. Nature of a building is determined, with regard to use and arrangement. 3.2. BCA criteria are applied to determine the defined classification. 3.3. BCA requirements are interpreted for multiple classifications.
4. Apply solutions to construction problems for compliance with the BCA.	4.1. Criteria that will ensure construction methods comply with the BCA are determined. 4.2. Alternative approaches to a construction problem that will comply with the requirements of the BCA are reported. 4.3. Appropriate assessment methods used to determine whether a building solution complies with performance requirements and/or DTS provisions of the BCA are chosen and applied.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

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REQUIRED SKILLS AND KNOWLEDGE

Required skills

Required skills for this unit are:

- ability to recognise procedures, follow instructions, respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - evaluate own actions to make judgements about performance and necessary improvements
  - read and interpret:
    - BCA
    - Australian standards
    - other relevant documentation
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
  - written skills to:
    - document building requirements
    - report alternative approaches to construction problems
- numeracy skills to analyse and apply complex mathematical information
- teamwork skills to work effectively with others.

Required knowledge

Required knowledge for this unit is:

- access requirements for people with a disability and the requirements of the Disability Discrimination Act (DDA) with regard to access
- authorities and powers of a building surveyor
- BCA and primary referenced Australian standards
- criteria for Class 2 to 9 buildings and Guide to BCA
- design, construction and structural principles of buildings
- DTS provisions
- nature of materials and effect on performance
- processes for the administration and preparation of documentation
- processes for the interpretation of reports, working drawings and specifications
- relevant federal, state or territory legislation and local government policy and procedures
- research methods
- terminology and definitions in relevant documentation.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational management policies and procedures, including quality assurance requirements where appropriate • classify building construction through the evaluation and interpretation of compliance with the BCA, and associated reporting of data, findings, recommendations and strategies for at least one residential building project and one commercial building project or equivalent in compliance with relevant legislation • provide reports to appropriate body/individual as determined by the project brief.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions

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EVIDENCE GUIDE

- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability

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EVIDENCE GUIDE

	and applied knowledge • all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed. Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Construction in residential and commercial buildings includes:	• compliance with relevant legislation, design specifications, maintenance specifications, relevant Australian standards • evaluation, interpretation and adherence to legislative requirements for BCA Class 2 to 9 buildings.
Building categories include:	• residential, commercial and industrial medium rise buildings and wide span buildings limited to three storeys and a maximum floor area not exceeding 2000 square metres.
Building surveying procedures include:	• mechanical, structural and electrical and may include other services.

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Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSV6009A Implement performance-based codes and risk management principles for buildings up to three storeys

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to implement performance-based codes, risk assessment and risk management principles to commercial and residential buildings up to three storeys and not exceeding a maximum floor area of 2000 square metres.

Application of the Unit

Application of the unit This unit of competency supports the attainment of the understanding and skills to implement performance-based codes and risk management principles for buildings up to three storeys within the context of relevant legislation, the Building Code of Australia (BCA) and Australian standards.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Evaluate performance-based designs.	1.1. Role of regulation of buildings and the built environment within society are identified and applied. 1.2. Societal goals related to the construction and use of buildings are interpreted. 1.3. BCA hierarchy and the role of objectives, functional statements and performance requirements are identified and recorded. 1.4. Differences between public policy and professional judgement are identified and recorded.
2. Apply the performance-based BCA.	2.1. Various assessment methods for performance-based codes, risk assessment and risk management principles contained in the BCA and their application are identified and applied for building projects requiring assessment and management of risk. 2.2. Methodologies for determining correct performance requirements for ***buildings*** to be satisfied are demonstrated. 2.3. Processes for involving relevant parties in the decision making process are determined. 2.4. Fire safety engineering brief (FSEB) process is identified and applied. 2.5. Assessment report for a performance-based solution is prepared. 2.6. Importance of documentation and record keeping for performance-based solutions is identified and applied. 2.7. Impacts of a performance-based solution on building maintenance and alterations are identified and reported.
3. Evaluate risk assessment.	3.1. Methods of determining and assessing risks are identified and applied. 3.2. Consequences of various forms of risk are identified and reported. 3.3. Basic probabilistic analysis, including use of event trees, is applied in accordance with risk assessment principles for fire safety engineering. 3.4. Statistics used in risk assessment practices are interpreted. 3.5. Research data sources for risk assessment and management are identified and applied.

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ELEMENT	PERFORMANCE CRITERIA
4. Evaluate fire safety engineering.	4.1. Potential fire hazards and causes of fire are identified and reported. 4.2. Fire loads and fire growth characteristics are identified and interpreted. 4.3. Research data sources for fire safety engineering are identified and interpreted. 4.4. Principles of fire detection, suppression and extinguishment are applied. 4.5. Tenability limits and effects and toxicity of smoke on building occupants are identified and listed in accordance with fire engineering principles. 4.6. Human behaviour and movement principles are identified and applied. 4.7. Fire brigade activities and intervention principles are recorded. 4.8. Compute software applications used in fire safety engineering are identified and their limitations of use assessed.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to recognise procedures, follow instructions, respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - evaluate own actions to make judgements about performance and necessary improvements
  - read and interpret:
    - BCA
    - legislation
    - other relevant documentation

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REQUIRED SKILLS AND KNOWLEDGE

- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication
- written skills to:
  - document building requirements
  - report alternative approaches to construction problems
- numeracy skills to apply probabilistic analysis and interpret statistics and other data
- teamwork skills to work effectively with others.

Required knowledge

Required knowledge for this unit is:

- authorities and powers of a building surveyor
- building fire safety
- DTS provisions
- fire safety engineering guidelines
- processes for the administration and preparation of documentation
- processes for the interpretation of reports, working drawings and specifications
- relevant federal, state or territory legislation and local government policy and procedures
- research methods.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational management policies and procedures, including quality assurance requirements where appropriate • evaluate and report data, findings and recommendations for the implementation of risk management strategies as a result of risk assessment and application of performance-based codes for at least one building development project up to three storeys, and in compliance with the applicable local government authority, relevant legislation and the BCA • provide reports to appropriate body/individual as determined by the project brief.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the

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EVIDENCE GUIDE

	mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • material safety data sheets • research resources, including industry related systems information. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at

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EVIDENCE GUIDE

the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Performance-based codes, ***risk assessment and risk management principles*** include:

- evaluation of new and proposed buildings for the purposes of highlighting potential risks and managing those risks through introduction of alternative solutions in compliance with the BCA.

Building projects requiring assessment and management of risk include:

- calculation and processing of application or inspection fees
- project milestones
- provision of site access/facilities
- work schedules.

Buildings are limited to:

- three storeys and a maximum floor area not exceeding 2000 square metres, complying with the BCA Class 2 to 9 buildings.

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Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSV6010A Apply fire technology to buildings up to three storeys

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to evaluate smoke detection and fire prevention, protection and control systems for buildings up to three storeys and not exceeding a maximum floor area of 2000 square metres.

It includes evaluation of firefighting equipment in buildings, integration of active and passive fire protection systems, and the determination of sprinkler and drencher requirements according to the Building Code of Australia (BCA), relevant legislation and Australian standards.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to apply fire technology to buildings up to three storeys within the context of relevant legislation, the BCA and Australian standards.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Evaluate smoke control in buildings.	1.1. Psychological effects of smoke on people exposed to building fires are researched. 1.2. Mechanisms of smoke movement in building are identified and recorded. 1.3. Smoke control systems identified to meet the requirements for buildings are documented in accordance with legislative requirements. 1.4. Application of computer-packaged smoke control systems is analysed and reported.
2. Analyse passive five protection systems for buildings.	2.1. Compartmentation purposes are reported. 2.2. Separation requirements for buildings from other buildings and structures are identified and recorded. 2.3. Requirements for escape from buildings are documented according to BCA requirements.
3. Determine suitability of fire detection systems for buildings.	3.1. Range of devices for active fire protection, such as alarms and detectors, is identified and selected for purpose use. 3.2. Acts and building regulations that govern the installation of active fire protection systems are identified and recorded for building projects requiring assessment of fire technology systems. 3.3. Requirements for fire detection systems in ***buildings*** are identified and selected. 3.4. Requirements for fire detection systems for buildings that present unusual fire hazards are identified and documented. 3.5. Agencies responsible for maintenance of ***fire safety systems*** in buildings are identified and listed according to state or territory legislation.
4. Determine the requirements for a range of firefighting equipment in buildings.	4.1. Legislation that governs the installation of firefighting equipment is identified and documented. 4.2. Extinguishing mediums used by firefighting agencies and their applications are identified and recorded. 4.3. Properties of extinguishment for the various mediums are identified and documented.
5. Check and identify fire alarms.	5.1. Various alarm systems and their operating conditions are identified and documented. 5.2. Various forms of detection and suppression systems are identified in accordance with BCA and relevant

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ELEMENT	PERFORMANCE CRITERIA
	Australian standards and are assessed for compliance. 5.3. Components and their function in the operation of a sprinkler system are checked for pertinence in accordance with BCA and relevant Australian standards.
6. Determine the requirements for sprinklers and drenchers in buildings.	6.1. Functions of sprinkler and drencher systems are recorded. 6.2. Sources of water supply to a sprinkler system are identified and documented in accordance with BCA. 6.3. Components and their function in the operation of a sprinkler system are interpreted.
7. Integrated active fire protection systems and passive fire protection are evaluated to ensure a safe and economical building.	7.1. Active and passive fire protection systems are identified and selected. 7.2. Building examination is carried out to determine the effectiveness of the active and passive fire protection systems according to BCA.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret:
    - BCA
    - legislation
    - other relevant documentation
  - use language and concepts appropriate to cultural differences

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REQUIRED SKILLS AND KNOWLEDGE

- use and interpret non-verbal communication
- written skills to:
  - provide an evaluation
  - report data, findings, recommendations and strategies
- innovation skills to develop creative and responsive approaches
- numeracy skills to calculate workplace requirements
- planning and organisational skills to research, collect, organise and understand information relating to the design of fire-compliant hydraulic systems and to take initiative and make decisions
- problem solving skills to analyse requirements, carry out tests, consider options and design an appropriate system.

Required knowledge

Required knowledge for this unit is:

- authorities and powers of a building surveyor
- Factory Mutual (FM) approved material specifications
- fire safety engineering guidelines
- fire technology principles in buildings
- National Fire Protection Association (NFPA) specifications
- processes for the administration and preparation of documentation
- processes for the interpretation of reports, working drawings and specifications
- relevant federal, state or territory legislation and local government policy and procedures
- research methods.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational management policies and procedures, including quality assurance requirements where appropriate • evaluate and report data, findings and recommendations for the implementation of fire technology strategies for at least one building development project up to three storeys, including smoke detection systems, fire prevention systems, protection and control systems, firefighting equipment, active and passive fire protection systems, sprinkler systems and drencher systems, with respect to compliance with the applicable local government authority, relevant legislation and the BCA • provide reports to appropriate body/individual as determined by the project brief.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements.

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EVIDENCE GUIDE

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances

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EVIDENCE GUIDE

assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Installation of active fire protection systems includes:

- new and proposed buildings, for the purposes of highlighting fire technology requirements and solutions in compliance with the BCA.

Building projects requiring assessment of fire technology systems include:

- calculation and processing of application or inspection fees
- project milestones
- provision of site access/facilities
- work schedules.

Buildings are limited to:

- three storeys and a maximum floor area not exceeding 2000 square metres, complying with

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RANGE STATEMENT

	the BCA Class 2 to 9 buildings.
Fire safety systems include:	• active and passive fire protection systems • drencher systems • firefighting equipment • fire prevention systems • protection and control systems • smoke detection systems • sprinkler systems.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSV6011A Apply legal procedures to building surveying

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to advise on building control activities in a court of law and present evidence in accordance with rules of evidence for civil and criminal trials.

It includes the identification and application of the rules of statutory interpretation as they relate to building control legislation.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to apply legal procedures to building surveying within the context of common law, relevant legislation, the Building Code of Australia (BCA) and Australian standards.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Distinguish between common law, judicial precedent and legislation.	1.1. Common law in the ***Australian legal system*** is analysed and documented. 1.2. Binding and persuasive precedent is analysed and interpreted. 1.3. Relationship between common law and ***statute law*** is analysed and documented. 1.4. Delegated legislation and authorities' allocated specific powers are documented. 1.5. Legal practice of reading case law and law updates are appraised and noted.
2. Identify and interpret the court hierarchy and the civil/criminal jurisdictions of each court.	2.1. Civil/criminal court hierarchy is analysed and documented. 2.2. Details of the ***types of courts*** for civil/criminal jurisdiction of each court are analysed and documented. 2.3. System of civil/criminal appeals is identified and documented. 2.4. Jurisdiction that the coroner's court has in regulatory practice and its role in legislative reform are identified and documented. 2.5. Role of legal personnel in the court system is identified and documented.
3. Identify and interpret courtroom procedures.	3.1. Court examination procedures are identified and documented. 3.2. Role of a judge and jury in a civil/criminal trial and eligibility to attend for jury service are identified and documented. 3.3. Format of a prosecution brief is identified and documented. 3.4. Appropriate manner of entering in to and departing courts or tribunals is adhered to. 3.5. Appropriate manner of addressing courts or tribunals is adhered to. 3.6. Relevant legal language is applied.
4. Identify types of offences and defences within criminal law.	4.1. Presumption of innocence in a criminal case and the burden of proof are analysed and documented. 4.2. General principles of criminal liability are determined. 4.3. Differences between summary and indictable offences are analysed and documented.

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ELEMENT	PERFORMANCE CRITERIA
	4.4. Types of defences are analysed and documented.
5. Detail types of evidence admissible in a civil/criminal trial.	5.1. ***Types of evidence*** are analysed and documented. 5.2. Differences between types of evidence in a court of law are defined and outlined. 5.3. Evidence rules are identified and documented.
6. Identify the rules of statutory interpretation.	6.1. Acts of parliament and subordinate legislation as a source of law are analysed and documented. 6.2. Extrinsic and intrinsic material as they relate to ***federal***, ***state or territory*** Interpretation Acts are identified and documented. 6.3. ***Syntactical presumptions*** are analysed and documented. 6.4. General approaches to ***statutory interpretation*** are identified and analysed.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - address courts/tribunals
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret:
    - legislation
    - other relevant documentation
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
  - written skills to record relevant information.

Required knowledge

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REQUIRED SKILLS AND KNOWLEDGE

Required knowledge for this unit is:

- Australian legal system and applications of law and legal principles in building surveying
- building policy and legislation
- legal terminology, definitions, processes and procedures used in standard court operations
- processes for the administration and preparation of documentation
- relevant federal, state or territory legislation and local government policy and procedures
- research processes and strategies.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational management policies and procedures, including quality assurance requirements where applicable • perform research, interpretation and analysis together with attendance and involvement in at least one civil law case and at least one criminal law case impacting on building control legislation, all in accordance with the professional code of conduct and ethics applicable to building control • provide reports to appropriate body/individual as determined by the project brief.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions

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EVIDENCE GUIDE

- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability

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EVIDENCE GUIDE

and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Australian legal system includes:

- Australian common law system
- laws applicable to building surveying
- professional code of ethics.

Statute law includes:

- common law
- judicial precedent
- legislation.

Types of courts include:

- civil and criminal jurisdictions.

Types of evidence include:

- admissible and inadmissible evidence
- direct
- documented
- hearsay
- oral
- real
- secondary.

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RANGE STATEMENT

Federal legislation includes:	• Disability Discrimination Act.
State or territory legislation includes:	• environmental health, planning, OHS and local government by-laws.
Syntactical presumptions include:	• ejusdem generis • noscitur a sociis.
Statutory interpretation includes:	• golden rule • literal rule • mischief rule.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSV6012A Facilitate community development consultation

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to initiate and undertake community consultation to facilitate supported community development.

It includes the identification and implementation of appropriate consultation models according to community demographics, analysis and evaluation of data to enable informed decision-making, and the presentation of findings to appropriate stakeholders.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to facilitate community development consultation

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Devise strategies and models of consultation.	1.1. Suitable consultation strategy is selected for consulting with communities. 1.2. ***Consultation strategy*** is selected, enabling interactions to occur between building surveyors and ***interested parties***, including community groups involved in community issues.
2. Facilitate community consultations.	2.1. Interest groups involved in consultation are briefed on process. 2.2. Community resources to develop and facilitate consultation are assessed for suitability. 2.3. Clear, accurate ***information*** is prepared and distributed to interest groups involved in consultation process.
3. Record analyse and report on outcome of consultations.	3.1. ***Consultation process*** responses are validated against design criteria specified in community goals. 3.2. Responses are collated into categories to facilitate desired outcomes. 3.3. Responses are formatted for decision making process to proceed. 3.4. Summary of responses and adopted recommendations are recorded and forwarded to interest groups. 3.5. Accurate reports on community consultation process are prepared, including recommendations to enable informed decisions to be made. 3.6. Overall effectiveness of consultation strategy is reviewed, evaluated and actioned by building surveyor.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to respond to change and contribute to workplace responsibilities, such as

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REQUIRED SKILLS AND KNOWLEDGE

current work site environmental and sustainability frameworks or management systems

- communication skills to:
  - address individuals and groups and gain their feedback
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret client and other relevant documentation
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
  - written skills to record relevant information.

Required knowledge

Required knowledge for this unit is:

- local factors affecting community development and consultation processes
- processes for the preparation of documentation
- relevant federal, state or territory legislation and local government policy and procedures
- research methods
- strategies for consultation.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational management policies and procedures, including quality assurance requirements where applicable • perform a leadership role in the identification and implementation of at least one significant community development consultation process or equivalent • provide reports to appropriate body/individual as determined by the project brief.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity

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EVIDENCE GUIDE

- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and

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EVIDENCE GUIDE

supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Consultation strategy includes:

- door-to-door visits
- meetings of peak bodies
- public meetings
- surveys.

Interested parties:

- include:
  - existing community groups
  - government agencies
  - individuals and special interest groups
- may include:
  - emergency services
  - private sector businesses.

Information includes:

- computer simulations
- display plans
- graphics
- handouts
- models
- software presentations

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RANGE STATEMENT

Consultation process includes:	• videos. • anecdotal information • historical data • interviews • meetings with key stakeholders • written records.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSV6013A Coordinate building refurbishment

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to undertake standard refurbishment of buildings.

It includes the evaluation of property/premises to establish the scope of work, preparation of inspection reports, and the engagement and coordination of subcontractors to carry out defined tasks.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to coordinate asset refurbishment within the context of relevant legislation, the Building Code of Australia (BCA) and Australian standards.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish refurbishment and inspection requirements.	1.1. Existing property inspection reports, where available, are used to advise client of the cost benefits associated with ***asset refurbishment process***. 1.2. Inspection method and criteria are consistent with the purpose of the inspection, client requirements and building type. 1.3. Relevant documentation is obtained and reviewed to clarify inspection requirements. 1.4. Inspections are arranged to minimise disruption to building users. 1.5. Access arrangements are confirmed prior to entry and where appropriate, agreement is secured with building tenant and owner for intrusive inspection.
2. Evaluate and report inspection outcomes.	2.1. Clear, concise and accurate inspection report is prepared in a timely manner and in an appropriate format and style consistent with statutory requirements. 2.2. Inspection outcomes are advised promptly to nominated parties and accurately recorded according to workplace procedures. 2.3. Processes involved in reaching objectives are evaluated for quality, added value and contribution to further refurbishment management opportunities.
3. Implement services contracts.	3.1. Team input consistent with achieving project objectives is coordinated through the enterprise to the satisfaction of subcontractors and the client. 3.2. Performance in relation to timelines and budgets is regularly monitored. 3.3. Necessary variations or adjustments are negotiated with subcontractors and the client, and agreed outcomes are documented. 3.4. ***Asset refurbishments*** are completed according to plan within budget and time constraints to client and statutory requirements. 3.5. Reports and administrative procedures are completed to client specifications.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - provide advice to client, confirm access arrangements, coordinate team and negotiate with clients and subcontractors
  - read and interpret property inspection reports and other relevant documentation
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
  - written skills to report inspection outcomes
- interpret and apply mathematical information.

Required knowledge

Required knowledge for this unit is:

- administration and preparation of documentation
- procedures to establish asset refurbishment of commercial buildings
- processes for the interpretation of status or inspection reports, dilapidation reports and refurbishment evaluation processes
- processes for the interpretation of working drawings and specifications
- relevant federal, state or territory legislation and local government policy and procedures
- research methods
- structural, design and construction principles of buildings.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational management policies and procedures, including quality assurance requirements where applicable • assess a building to determine refurbishment requirements and report findings, including the required engagement of subcontractors for the refurbishment of at least one building • provide reports to appropriate body/individual as determined by the project brief.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity

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EVIDENCE GUIDE

- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and

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EVIDENCE GUIDE

supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Asset refurbishment process includes:

- evaluation and inspection of properties/premises
- implementation of service contracts with subcontractors
- reporting of inspection outcomes.

Asset refurbishment:

- includes commercial property/premises and may include residential property/premises
- lease property requiring the services of subcontractors or assessment of a property/premise in determining the scope of work required for refurbishment.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSV6014A Manage and plan land use

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to plan and manage the use of land in a regulated building environment.

It includes the evaluation of relevant legislation and application of land management practices and planning concepts required in conventional building developments.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to manage and plan land use within the context of relevant legislation, the Building Code of Australia (BCA) and Australian standards.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Evaluate legislation pertaining to land use planning.	1.1. Statutes and common law impacting upon ***planning and management of land use*** are researched and analysed. 1.2. Appeals procedures under present legislation are interpreted.
2. Plan land development and control processes.	2.1. Formal planning and approval process is identified through legislation. 2.2. Document appeals procedure is identified through legislation. 2.3. Legal requirements governing the introduction of planning schemes are identified and interpreted. 2.4. Public consultation measures available under legislation are defined and planned.
3. Evaluate the effects of transport and infrastructure on land use management decisions.	3.1. Specific site requirements for transportation, infrastructure systems and design effects on land use management practices are evaluated and reported. 3.2. Historical urban development assessments of the impact of transport requirements on land use patterns are researched and reported.
4. Apply spatial organisation factors to the land development process.	4.1. Scale and scope of the land development are determined through the land development process. 4.2. Factors determining positioning of buildings on lots are identified. 4.3. Provision of adequate space in a development is justified through spatial organisation factors. 4.4. Streetscape construction as part of the development process is identified and established.
5. Determine strategies for the use of land.	5.1. Scope of land use in relation to principles of land use management is evaluated. 5.2. Extent of existing constraints influencing decision making process of land management is identified. 5.3. Criteria for prioritising land use area are established according to sustainable development principles. 5.4. Rural land use and any special considerations for the land management process are established according to sustainable development principles. 5.5. Strategies for effective land use management are identified through review of management models.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret legislation other relevant documentation
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
  - written skills to report relevant information.

Required knowledge

Required knowledge for this unit is:

- land use management models and concepts
- legal control and appeal system for land use
- local market conditions and availability of residential and commercial building development areas
- processes for the administration and preparation of documentation
- processes for the interpretation of inspection reports, working drawings and specifications
- processes for the interpretation of socioeconomic data
- relevant federal, state or territory legislation and local government policy and procedures for land use
- research methods
- urban zoning procedures.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction

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with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational management policies and procedures, including quality assurance requirements where applicable • assess land to determine use management requirements and develop a plan; and associated reporting of findings, recommendations and strategies for at least one industrial or commercial land parcel or equivalent • provide reports to appropriate body/individual as determined by the project brief.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work

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practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and

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supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Planning and management of land use includes:

- commercial, industrial and urban land, and may include rural and bush land
- evaluation of land and inspection for the purposes of future planned development projects and the reporting of inspection outcomes
- topographical issues, such as flood liability, bushfire prone areas and the impact of local land legislation.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSV6015A Analyse and present building surveying research information

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to gather, organise and present building surveying information using available systems.

It includes the design, execution and documentation of research for a building surveying project.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to analyse and present building surveying research information within the context of relevant legislation, the Building Code of Australia (BCA) and Australian standards.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare a research plan.	1.1. Views and interests of stakeholders are reflected in a research methodology compatible with ethical considerations.
	1.2. ***Research methodology*** is selected in accordance with needs, purposes and resources to maximise credibility of research outcomes.
	1.3. ***Research*** strategies are selected and used that are appropriate to client group, information being researched, resources available and outcomes sought.
	1.4. Strategies for validating research outcomes are incorporated into the research plan.
2. Implement research strategies.	2.1. Resources needed to conduct research are determined and allocated.
	2.2. Relevant information is collected in a timely manner and recorded and stored to ensure validity, confidentiality and security.
	2.3. A representative range of people and groups with an interest in the identified issues are consulted to ensure validity of outcomes.
	2.4. Consultation is undertaken according to the agreed practices and protocol of own and other agencies in accordance with organisational practices and protocols.
	2.5. Consideration of cultural sensitivities and ethical issues is embedded in all consultation.
3. Organise and analyse information.	3.1. Information is organised in an analytical format suitable for the purpose of the research.
	3.2. Patterns and explanations developed are derived from the data to ensure validity and reliability.
4. Report the findings.	4.1. Details of the research findings are documented.
	4.2. Opportunities are provided for the validation of the research findings.
	4.3. Results of the research are reported and made available to all relevant stakeholders in the appropriate document format.

Required Skills and Knowledge

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - carry out consultations
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret relevant documentation
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
  - written skills to:
    - prepare a research plan
    - record relevant information
    - report finding
- interpret data from information collected.

Required knowledge

Required knowledge for this unit is:

- building policy and legislation
- consultation methods, including cultural considerations
- environmental planning and design
- federal, state or territory legislation and local government policy and procedures relevant to building surveying
- heritage preservation
- manual and electronic information systems
- performance measures
- processes for the administration and preparation of documentation
- research processes and strategies.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational management policies and procedures, including quality assurance requirements where applicable • perform research design, and analyse, consult and report findings for at least one major building project in accordance with standard research practices • provide reports to appropriate body/individual as determined by the project brief.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity

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- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and

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supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Research methodology includes:

- consultation
- definitions
- historical data
- material safety data sheets (MSDS)
- reports
- written records.

Research includes:

- building policy and legislation
- design and construction of buildings
- fire engineering
- geomechanics
- heritage preservation
- performance evaluation
- planning and design.

Unit Sector(s)

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Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCSV6016A Apply building surveying procedures to buildings up to three storeys

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to assess medium rise building projects of up to three storeys and a maximum floor area of 2000 square metres for compliance with building and land use requirements.

It includes the evaluation and interpretation of plans, progressive inspection of building work, preparation of reports and compliance with legislative requirements.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to apply building surveying procedures to buildings up to three storeys within the context of relevant legislation, the Building Code of Australia (BCA) and Australian standards.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Evaluate documents submitted with an application for building and land use.	1.1. Plans, specifications and structural drawings for commercial and medium rise residential buildings are evaluated for compliance with building application process and ***application of building surveying procedures to commercial and residential medium rise buildings***. 1.2. Application/proposal is evaluated against legislative requirements for ***commercial, industrial and residential medium rise buildings***. 1.3. Components of the application for ***medium rise building projects requiring building surveying*** requiring referral to other agencies or departments are identified and forwarded according to ***building surveying procedures***. 1.4. Common faults with application are identified, noted and reported to relevant parties. 1.5. Notice of decision, including approval, conditional approval or refusal, is drafted and processed according to workplace procedures.
2. Determine compliance of a new building with approved plans, relevant legislation and standards during its construction.	2.1. Approved plans are examined and any critical components requiring inspection and compliance checks are identified. 2.2. Critical components identified are inspected on site for compliance with approved documentation. 2.3. On-site problems and suggested rectification methods to achieve compliance are reported in writing according to workplace procedures. 2.4. Rectified work is checked and formally reported to the relevant authorities to confirm compliance with statutory requirements. 2.5. Installed services in buildings are identified for compliance.
3. Compile report on an existing building of not more than three storeys and with a floor area not exceeding 2000 square metres for compliance with relevant legislation.	3.1. Classification of an existing building is determined. 3.2. Requirements of a particular class of building are determined and an inspection report is compiled for breach of requirements of the building. 3.3. Possible effects to the public of the breach are determined. 3.4. Inconsistent elements and the extent of rectification required for compliance is compiled in the report. 3.5. Local and state or territory government legislative

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ELEMENT	PERFORMANCE CRITERIA
	requirements for upgrade works are identified and reported.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret:
    - drawings
    - legislation
    - plans and specifications
    - other relevant documentation
  - report faults with application
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
  - written skills to:
    - report on problems and methods to achieve compliance
    - provide reports to relevant authorities.

Required knowledge

Required knowledge for this unit is:

- authorities and powers of a building surveyor
- nature of materials and effect on performance
- processes for the administration and preparation of documentation
- processes for the interpretation of reports, working drawings and specifications
- relevant federal, state or territory legislation and local government policy and procedures for building surveying
- research methods

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REQUIRED SKILLS AND KNOWLEDGE

- structural, design and construction principles of buildings.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with OHS regulations applicable to workplace operations • apply organisational management policies and procedures, including quality assurance requirements where applicable • apply building surveying procedures and the associated reporting of data, findings, recommendations and strategies for at least one commercial or medium rise residential building project or equivalent • produce an accurate proposal outlining status of approval, compliance with regulations, and determination of safety procedures for one commercial, industrial or medium rise residential building project • provide reports to appropriate body/individual as determined by the project brief. and according to workplace procedures.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include:

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- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and

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separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Application of building surveying procedures to commercial and residential medium rise buildings includes:

- evaluation and interpretation of plans, progressive inspection of building work, preparation of reports and adherence to legislative requirements for BCA Class 2 to 9 buildings.

Commercial, industrial and residential medium rise buildings are limited to:

- three storeys and a maximum floor area not exceeding 2000 square metres.

Medium rise building projects requiring building surveying include:

- processing of applications
- project milestones
- provision of site access/facilities

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RANGE STATEMENT

Building surveying procedures include:	• work schedules. • construction • electrical • mechanical • structural • other services.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCVE1002B Undertake a basic computer design project

Modification History

Minor changes throughout unit
Equivalent to CPCCVE1002A

Unit Descriptor

This unit of competency specifies the outcomes required to undertake a basic computer design project involving the design of a simple structure, such as a barbecue area, deck, pergola or shed. It includes interpretating a client brief, applying the computer design software, refining the design, and final production of the design in plan and elevation format.

Application of the Unit

This unit supports the attainment of understanding how to design a basic construction project using relevant computer equipment and software.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	Plan and prepare for the design.	1.1	***Work health and safety*** (WHS) requirements, including ergonomic and personal protection needs are observed throughout the work.
		1.2	Outline action plan is prepared, taking into account ***scope of work*** to be done, available time and a critical issues timeline.
		1.3	Equipment and materials, including available computing systems, required for the work are identified and obtained or scheduled.
		1.4	Detail of the design requirement is identified from a prepared client brief and relevant ***information***.
		1.5	Details of client's preferred construction materials are confirmed with relevant supervisor.
		1.6	Details of services, inclusions and ***quality requirements*** are confirmed with relevant supervisor.
2	Prepare the first draft design.	2.1	Design software capable of producing required results is selected.
		2.2	Design system is prepared for use following authorised set-up procedures.
		2.3	Design parameters and other relevant information for the proposed structure are progressively placed into the computer system.
		2.4	Design information is modified in the system as anomalies and errors become apparent and the transactions are recorded.
		2.5	First draft design is completed and prepared for presentation to the client.
3	Refine and confirm the design requirements.	3.1	First draft design, together with justifications for departure from the client brief, are explained to relevant supervisor for negotiation with the client.
		3.2	Details of variations to the design that the relevant supervisor has negotiated and agreed with the client are

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			noted and confirmed.
4	Finalise the design.	4.1	Agreed variations to the first draft design are converted to usable data that meets ***statutory and regulatory authority*** requirements.
		4.2	Variations are incorporated into the design using software capabilities.
		4.3	Required explanatory information and margin note detail are incorporated into the design.
		4.4	Design is finalised, titled and presented in both plan and elevation form to the relevant supervisor.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - present design plan and negotiate and agree on plan with supervisor
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to prepare an outline action plan and develop and finalise a design
- creative design, drawing and drafting skills, including use of drafting equipment
- intiative and enterprise skills to identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and calculations, including basic calculations of height, areas, volumes and grades
- planning and organising skills to:
  - ensure coordinated development of sketches and drawings
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to operate computer-aided design (CAD) software systems.

Required knowledge

Required knowledge for this unit is:

- basic calculations of height, areas, volumes and grades
- CAD software systems and user techniques
- commonly used construction terminology, symbols and abbreviations
- commonly used residential construction materials and their applications
- features of plans and elevations, including orientation, direction, scale, key, contours, symbols and abbreviations
- fundamentals of design in terms of space, access, flow and function

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- impact on design of environmental requirements
- impact on design of quality requirements
- project quality requirements
- techniques for reading and interpreting plans.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with OHS regulations and state and territory legislation applicable to the design function
- comply with organisational policies and procedures, including quality requirements
- communicate and work effectively and safely with others
- design a residential structure, including:
  - interpreting and confirming a client brief
  - producing, using a CAD system, a first draft design
  - finalising the design and presenting it, in both plan and elevation form, to the client.

Context of and specific resources for assessment

This unit of competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements

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- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

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Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be in accordance with legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:

- emergency procedures related to the design function, such as extinguishing fires
- personal protective equipment prescribed under legislation, regulation and workplace policies and practices
- state or territory legislation and regulations and organisational safety policies and procedures, which include:
  - ergonomics
  - use of materials and equipment
  - workplace environment and safety.

Scope of work includes:

- CAD software that accepts and manipulates data to present design options and outcomes, with results possibly represented in two or three dimensional form
- client brief that is a definitive and documented description of the user requirements in terms of dimensions, services, construction materials and other defined requirements
- plans that include a title panel, amendment detail, orientation, legend information, industry symbols and abbreviations, material information and relevant finishes/standards of work

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- services in the client brief that include power or plumbing systems
- simple domestic or residential structure, such as a barbecue area, deck, pergola or shed.

Information includes:

- CAD software packages and related user information
- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions for major equipments
- maps
- memos
- regulatory and legislative requirements pertaining to design of residential structures
- relevant Australian standards
- safe work procedures related to design work
- verbal, written and graphical instructions.

Quality requirements include relevant regulations, including:

- Australian standards
- internal company quality policy and standards
- manufacturer specifications, where specified.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Unit Sector(s)

Functional area

Unit sector Construction

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Custom Content Section

Not applicable.

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CPCCVE1011A Undertake a basic construction project

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to undertake a basic construction project to provide elementary skills applicable to the construction industry. It includes completion of a project using basic tools, equipment and materials.

Application of the Unit

Application of the unit This unit supports the attainment of basic construction work applications for new construction sites, existing structures being renovated or extended, and existing structures subject to service, restoration or maintenance which includes working with others and as a member of a team.

Basic projects include minor projects within any sector of the construction industry, for example, constructing a pergola, barbecue or footpath.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details for the ***project planning*** are obtained, confirmed and applied from relevant ***information***. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and ***statutory and regulatory authority*** obligations, and are applied.
2. Prepare materials for use on a simple construction project.	2.1. Required materials are selected for the project from project plans and specifications. 2.2. Materials are checked for quality in accordance with the specifications.
3. Determine component requirements and assembly sequence.	3.1. Component parts are identified from working drawings and specifications. 3.2. Processes for manufacture, assembly or other construction techniques and components are selected and applied in accordance with working drawings, specifications and established work procedures. 3.3. Construction process is determined. 3.4. Component parts are checked for accuracy, quality and suitability for the project according to plans, drawings, specifications and established work procedures.
4. Operate hand tools.	4.1. Hand tools are identified and checked for serviceability and operation in accordance with OHS legislation. 4.2. Equipment to hold or support material during the operation of tools is selected and applied in accordance with standard work practices.

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ELEMENT	PERFORMANCE CRITERIA
	4.3. Hand tools are used in accordance with OHS legislation.
5. Use equipment safely.	5.1. Equipment is selected and checked for serviceability and operation in accordance with OHS legislation.
	5.2. Equipment is safely and effectively operated in accordance with OHS legislation, and used to construct basic project.
6. Construct a simple project.	6.1. Work area requirements are prepared in accordance with working drawings, specifications and established work procedures.
	6.2. Set out, levelling, construction and erection or installation of project are implemented in accordance with application and requirements for line, level and plumb in construction projects.
	6.3. Construction project is completed to specification and ***quality*** and is checked for conformity to plans and design specifications.
7. Clean up.	7.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	7.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:

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REQUIRED SKILLS AND KNOWLEDGE

    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and calculations
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- basic construction techniques
- construction materials
- construction terminology
- hazardous materials
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- material sizes
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- plumb, line and level
- processes for the calculation of material requirements
- quality requirements
- tools and equipment types, characteristics, uses, limitations and maintenance
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • safely and effectively use tools and equipment • communicate and work effectively and safely with others • complete a basic construction project to specifications, complying with OHS requirements, correct and safe use of hand tools and equipment.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions

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EVIDENCE GUIDE

- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability

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EVIDENCE GUIDE

and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Project planning includes:

- assessment of conditions
- determining work requirements
- equipment defect identification
- hazards
- work site inspection.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to undertaking a basic construction project

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RANGE STATEMENT

	• relevant Australian standards • safe work procedures relating to undertaking a basic construction project • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment include:	• those appropriate to the project.
Materials include:	• those appropriate to the project.

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RANGE STATEMENT

Environmental requirements include:	• noise and dust • vibration and clean-up management • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Quality requirements include:	• internal company quality policy and standards • manufacturer specifications, where specified • relevant regulations, including Australian standards • workplace operations and procedures.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCWC2001A Complete penetrations and flashings

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to complete the penetrations and flashings associated with wall and ceiling lining. It does not cover the technical aspects of passive fire systems.

It includes planning and preparation for work, selection and safe use of tools and equipment to complete the penetrations and flashings, restoration of the integrity of the wall or ceiling, and completion of post work clean-up activities.

Application of the Unit

Application of the unit

This unit supports the attainment of skills and knowledge to safely and efficiently complete penetrations and flashings while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools, plant and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Confirm the penetration and flashing requirement.	2.1. Type of ***penetration and flashing*** is selected to match the particular need and host materials. 2.2. Location of the penetration is identified, set out and confirmed. 2.3. Tools, plant and equipment selected to carry out tasks are consistent with the requirements of the job, checked for serviceability, and any faults are rectified or reported prior to commencement.
3. Complete the penetrations and flashings.	3.1. Penetrations are completed safely and with minimal modification or damage to the host materials. 3.2. Flashings are completed safely and with minimal modification or damage to the host materials. 3.3. Casings, housings or other terminating points are installed and connections made in accordance with state and territory requirements. 3.4. Proprietary sealants or caulking compounds are applied to restore the integrity of the wall or ceiling system. 3.5. Surfaces are prepared for finishing.
4. Clean up.	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation,

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ELEMENT	PERFORMANCE CRITERIA
	regulations, codes of practice and job specification. 4.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:

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REQUIRED SKILLS AND KNOWLEDGE

- use a range of mobile technology, such as two-way radio and mobile phones
- voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- job safety analysis (JSA) and safe work method statements
- materials storage and environmentally friendly waste management
- penetration and flashing techniques
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- services locating techniques
- systems and techniques for safe handling of materials
- types of services and purposes for which penetrations and flashings are required
- types, characteristics, uses and limitations of wall and ceiling lining materials
- types, characteristics, uses and limitations of hand and power tools for wall and ceiling lining
- wall and ceiling industry terminology
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- complete a minimum of three penetration and flashing tasks, including:
  - one for electrical services
  - one for communication services.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- workplace location or simulated workplace
- hand and power tools and equipment

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EVIDENCE GUIDE

appropriate to the completion of penetrations and flashings
- realistic activities covering the mandatory task requirements
- specifications and work instructions.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability

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EVIDENCE GUIDE

and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to completion of penetrations and flashings
- relevant Australian standards
- safe work procedures relating to completion of penetrations and flashings
- signage
- verbal, written and graphical instructions

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RANGE STATEMENT

	• work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • cutting edges
	  • lighting
	  • manual handling
	  • noise, dust and ventilation
	  • power equipment
	  • power leads and sources
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment include:	• broad knives • brooms • electric screw guns • hand and power drills • hand saws • keyhole saws

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RANGE STATEMENT

	• measuring tapes and rules • paintbrushes • plasterboard hammers • plasterer's trowels • scaffold planks • T squares • taping knives • trestles.
Plant and equipment include:	• earth leakage protection • lighting sets • power activated fasteners • power routers • power saws • small compressor air operated • small petrol or diesel engine driven generators.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials include:	• beads • cement render • fibre cement sheets • finishing materials • plaster compounds • plasterboard • plasterglass sheets • water resistant plasterboard.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Penetration and flashings include those required for:	• communications • control joints • electrical power • plumbing.

Unit Sector(s)

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Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCWC3001A Install and finish plasterboard and fibre cement sheeting to curved walls and ceilings

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to fix and finish plasterboard and fibre cement sheeting to steel and timber framed curved walls and curved ceilings.

It includes planning and preparation for the work, preparation of the work area for the installation process, measuring and cutting the material, fixing the material, jointing and finishing, and completion of post work clean-up activities.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of skills and knowledge to install and finish plasterboard and fibre cement sheeting to curved walls and ceilings while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work ***application*** are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Prepare work area for installation processes.	2.1. Work area and ***substrate*** are prepared for application of sheeting. 2.2. Timber or steel wall and ceiling framing are checked for consistency of ***curve*** and any faults are rectified or reported. 2.3. Equipment and materials are checked against work order or manufacturers' specification and positioned in preparation for the work. 2.4. Thermal and acoustic batt insulation for walls and ceilings are selected to manufacturer specifications (RW rating).
3. Install batt system insulation.	3.1. Insulation batts are installed firmly between framing member and against lining material in accordance with manufacturer specifications. 3.2. Batts are abutted with closed joints and end of run completed with batt cut to size and fitted. 3.3. Insulation batts are installed firmly in the wall framing, ensuring clearance of framing to fix plaster sheeting. 3.4. Batts are installed to ceiling framing to a tight fit, ensuring full coverage between joists.

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ELEMENT	PERFORMANCE CRITERIA
4. Fix plasterboard and fibre cement products to walls and ceilings.	4.1. Materials are pre-conditioned for the application in accordance with manufacturer specifications. 4.2. Materials are measured and marked to ensure compliance with work requirements and minimal wastage. 4.3. Wall and ceiling sheets are cut to fit specified locations with clearance to manufacturer specifications. 4.4. Wall and ceiling sheets are fixed to specified locations with mechanical fastenings or combined adhesive and fasteners, to manufacturer specifications and relevant standards. 4.5. All work is carried out to manufacturer specifications and relevant Australian standards.
5. Joint and finish materials.	5.1. Compounds for backblocking and jointing are prepared to manufacturer specifications. 5.2. Backblocks are applied to specification. 5.3. Additional design details and features are identified. 5.4. Beading is installed to design requirements. 5.5. Jointing and ***finishing*** of plasterboard and fibre cement sheeting is completed in accordance with manufacturer specifications.
6. Clean up.	6.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 6.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:

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REQUIRED SKILLS AND KNOWLEDGE

- follow instructions
- read and interpret:
  - documentation from a variety of sources
  - drawings and specifications
- recognise procedures
- report faults
- enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication, such as hand signals
- written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- insulation and authorised ratings
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- materials preparation and testing techniques
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- techniques for fixing materials to steel and timber frames
- techniques for applying and sanding topping compound
- techniques for handling and mixing plaster bag material
- types, uses and limitations of materials used in installation and fixing tasks

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REQUIRED SKILLS AND KNOWLEDGE

- wall and ceiling terminology
- wall and ceiling tools and equipment types, characteristics, uses and limitations
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to:
	• locate, interpret and apply relevant information, standards and specifications
	• comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
	• comply with organisational policies and procedures including quality requirements
	• safely and effectively operate and use tools, plant and equipment
	• communicate and work effectively and safely with others
	• install and finish plasterboard or fibre cement sheeting to a curved substrate, including:
	  • a minimum of two sheets
	  • either mechanical or adhesive fixing systems.

Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • workplace location or simulated workplace

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EVIDENCE GUIDE

- materials relevant to installation and finishing operations
- hand and power tools and equipment appropriate to installation and finishing operations
- realistic activities covering the mandatory task requirements
- specifications and work instructions.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice,

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EVIDENCE GUIDE

with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining the installation and finishing of plasterboard and fibre cement sheeting
- relevant Australian standards
- safe work procedures relating to the installation and finishing of plasterboard and

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RANGE STATEMENT

	fibre cement sheeting • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • lighting
	  • manual handling
	  • noise, dust and ventilation
	  • power equipment
	  • power sources and cables
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment:	• include:
	  • broad knives
	  • cement sheet cutters (electric and hand)
	  • electric screw guns

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RANGE STATEMENT

	• hand sanding floats
	• hand saws
	• internal angle taping tools
	• keyhole saws (electric and hand)
	• measuring tapes and rules
	• mixers (electric and hand)
	• paintbrushes
	• plasterboard hammers
	• plasterer's trowels
	• taping knives
	• T-squares
	• may include:
	  • electric sanding floats
	  • mechanical finishing tools
	  • scaffold planks
	  • trestles.

Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials include:	• adhesives • arch beads • base • casing beads • corner beads • fibre cement sheets • finishing materials • insulation batts • perforated paper tape • plasterboard • shadowline beads.
Material ***application*** is to be in accordance with:	• manufacturer specifications for fibre cement sheeting • relevant Australian standard (for plasterboard).
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.

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RANGE STATEMENT

Substrates include:	• battened masonry surfaces • steel framing • steel furring channels • timber framing • timber or steel battens.
Curved ceilings are vaulted ceilings which may be:	• cambered • elliptical • pitched • undulating.
Curved surfaces include:	• bulkheads.
Finishing is to achieve:	• a smooth, flat, scratch and blemish free surface.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCWC3002A Install and finish plasterboard and fibre cement sheeting to arches

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to fix and finish plasterboard and fibre cement sheeting to arches.

It includes the planning and preparation for the work, the preparation of the work area for the installation process, the measuring and cutting of the material, the fixing of the material, the jointing and finishing and the completion of post work clean-up.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of skills and knowledge to install and finish plasterboard and fibre cement sheeting to arches while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Prepare work area for installation processes.	2.1. Work area and substrate are prepared for application of sheeting. 2.2. Timber/steel wall ***framing*** is checked for straightness and plumb and any faults are rectified or reported. 2.3. Thermal and acoustic batt insulation for walls and ceilings are selected to manufacturer specifications (RW rating).
3. Install batt insulation.	3.1. Insulation batts are installed firmly between framing member and against lining material in accordance with manufacturer specifications. 3.2. Batts are abutted with closed joints and end of run completed with batt cut to size and fitted. 3.3. Insulation batts are installed firmly in the wall framing ensuring clearance of framing to fix plaster sheeting. 3.4. Batts are installed to ceiling framing to a tight fit ensuring full coverage between joists.
4. Fix plasterboard and fibre cement products to arches.	4.1. Materials are pre-conditioned for the ***application*** in accordance with the manufacturer specifications. 4.2. Materials are measured and marked to ensure

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ELEMENT	PERFORMANCE CRITERIA
	compliance with work requirements and minimal wastage.
	4.3. Sheets are cut to fit specified ***arch*** locations with clearance to manufacturer specifications.
	4.4. Sheets are fixed to specified arch locations with mechanical fastenings or combined adhesive/ fasteners to manufacturer specifications and relevant standards.
	4.5. All work is carried out to manufacturer specifications and relevant Australian standards.
5. Joint and finish materials.	5.1. Compounds for backblocking and jointing are prepared to manufacturer specifications.
	5.2. Backblocks are applied to specification.
	5.3. Additional design details and features are identified.
	5.4. Beading is installed to design requirements.
	5.5. Jointing and ***finishing*** of plasterboard and fibre cement sheeting is completed in accordance with manufacturer specifications.
6. Clean up.	6.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	6.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications

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REQUIRED SKILLS AND KNOWLEDGE

- recognise procedures
- report faults
- enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication, such as hand signals
- written skills to record results of checks and tests and relevant work completion procedures

- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- arch types, options, uses and limitations
- job safety analysis (JSA) and safe work method statements
- material safety data sheets
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- techniques for fixing materials to steel and timber frames
- techniques for the application and sanding of topping compound
- techniques for the handling and mixing plaster bag material
- the types, uses and limitations of materials used in installation and fixing tasks
- wall and ceiling terminology
- wall and ceiling tools and equipment types, characteristics, uses and limitations
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- install and finish to specification, one plasterboard arch including:
  - a minimum of two sheets
  - wall and corner junctions
  - application or arch beads, and
  - either mechanical or adhesive fixing systems
- set out to specification of a minimum of one each of segmental, gothic, elliptical, Tudor and ogee arches.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory

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or Australian standards' requirements.

Resource implications for assessment include:

- workplace location or simulated workplace
- materials relevant to installation and finishing operations
- hand and power tools and equipment appropriate to installation and finishing operations
- realistic activities covering the mandatory task requirements
- specifications and work instructions.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured

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EVIDENCE GUIDE

learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- material safety data sheets (MSDS)
- memos
- regulatory and legislative requirements pertaining to the installation and finishing of

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RANGE STATEMENT

	plasterboard and fibre cement sheeting • relevant Australian standards • safe work procedures relating to the installation and finishing of plasterboard and fibre cement sheeting • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • lighting
	  • manual handling
	  • noise, dust and ventilation
	  • power equipment
	  • power sources and cables
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

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RANGE STATEMENT

Tools and equipment include:	• broad knives • cement sheet cutters (electric and hand) • electric screw guns • hand saws • internal angle taping tools • keyhole saws (electric and hand) • measuring tapes and rules • mechanical finishing tools • mixers (electric and hand) • paintbrushes • plasterboard hammers • plasterer's trowels • sanding floats (electric and hand) • taping knives • trestles and scaffold planks • T-squares.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials include:	• adhesives • arch beads • base • casing beads • corner beads • fibre cement sheets • finishing materials • insulation batts • perforated paper tape • plasterboard • shadowline beads.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Framing includes:	• battened masonry surfaces • steel framing • steel furring channels • timber framing • timber or steel battens.

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RANGE STATEMENT

Material ***application*** is in accordance with:	• manufacturer specifications for fibre cement sheeting • relevant Australian standard (for plasterboard).
Arches include:	• elliptical • gothic • may include • ogees • segmental • semi-circular • three-centred.
Finishing is to achieve:	• a smooth, flat, scratch and blemish-free surface.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCWC3003A Install dry wall passive fire-rated systems

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to select and install dry wall fire-rated systems to walls and ceilings.

It includes planning and preparation for installation; installation of approved systems for timber stud walls, steel stud partitions, shaft walls, timber joist and suspended ceilings; and completion of post-installation activities.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of skills and knowledge to install dry wall passive fire-rated systems while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Line a timber stud wall using a fire-rated system.	2.1. Structure of the timber wall for load or non-load bearing is established. 2.2. ***Fire-rating*** design is selected for the timber stud wall. 2.3. Materials are set out to manufacturers' fire-rated test. 2.4. ***Fixings*** are spaced in accordance with manufacturer specifications. 2.5. Material is fixed using correct procedures and fixing. 2.6. ***Penetrations*** are completed safely and in accordance with manufacturers' design and job specifications. 2.7. Joints are finished to exposed face layers of sheeting using recommended materials and procedures.
3. Construct steel stud fire-rated partition system.	3.1. Fire-rating design is selected for the steel stud wall. 3.2. Correct fixing requirements are established for the steel stud wall as designated by the manufacturer and in accordance with relevant fire test criteria. 3.3. Deflection heads are secured and sealant is applied in accordance with the fire-rated system design. 3.4. Material is set out in accordance with manufacturers' fire-rated test.

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ELEMENT	PERFORMANCE CRITERIA
	3.5. Fixings are spaced in accordance with manufacturer specifications.
	3.6. Material is fixed using correct procedures and fixings.
	3.7. Penetrations are completed safely and in accordance with manufacturers' design and job specifications.
	3.8. Joints are finished to exposed face sheet layers using recommended materials and procedures.
4. Construct a fire-rated shaft wall system.	4.1. Material is selected in accordance with manufacturer specifications.
	4.2. Components are fixed to exact clearances to manufacturer specifications.
	4.3. Materials are set out in accordance with manufacturers' design and job specifications.
	4.4. Penetrations are completed safely and in accordance with specifications.
	4.5. Joints are finished to exposed face sheet layers using recommended materials and procedures.
5. Line a timber joist ceiling using fire-rated system.	5.1. Ceiling joist substrate is prepared to be flat and straight to accommodate lining of the required fire-rated system.
	5.2. Fixings are selected in accordance with manufacturers' design.
	5.3. Lining is applied in accordance with manufacturers' design.
	5.4. Fixings are spaced at correct intervals.
	5.5. Penetrations are completed safely and in accordance with job specifications.
6. Construct a suspended ceiling with a fire-rating system.	6.1. Materials are selected for required fire-rated ceiling according to manufacturer specifications.
	6.2. Fixings are chosen in accordance with manufacturers' design.
	6.3. Ceiling is constructed to be flat, true, level and structurally sound.
	6.4. Joints are finished to exposed face sheet layers using recommended materials and procedures.
	6.5. Penetrations are completed safely and in accordance with specifications.
7. Clean up.	7.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.

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ELEMENT	PERFORMANCE CRITERIA
	7.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones

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REQUIRED SKILLS AND KNOWLEDGE

- voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- basic combustion theory
- dry wall passive fire-rated T-systems installation techniques and processes
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- range of materials commonly used in the installation of dry wall passive fire-rated systems
- regulations and building codes related to dry wall passive fire-rated systems
- tools and equipment used in the installation of dry wall passive fire-rated systems
- types and specifications for dry wall passive fire-rated systems related to steel stud and timber stud walls, shaft walls, timber joists and suspended ceilings
- wall and ceiling terminology
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to:
	• locate, interpret and apply relevant information, standards and specifications
	• comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
	• comply with organisational policies and procedures including quality requirements
	• safely and effectively operate and use tools, plant and equipment
	• communicate and work effectively and safely with others
	• install to specification a minimum of three dry wall passive fire-rated systems with:
	  • one for a steel stud wall
	  • one covering columns and beams
	  • one comprising a multiple layer system.

Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • workplace location or simulated workplace

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EVIDENCE GUIDE

- materials relevant to the installation of dry wall passive fire-rated systems
- hand and power tools and equipment appropriate to the installation of dry wall passive fire-rated systems
- realistic activities covering the mandatory task requirements
- specifications and work instructions.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice,

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EVIDENCE GUIDE

with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to the installation of dry wall passive fire-rated systems
- relevant Australian standards
- safe work procedures relating to the installation of dry wall passive fire-rated

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RANGE STATEMENT

	systems • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • cutting tools
	  • lighting
	  • manual handling
	  • noise, dust and ventilation
	  • power equipment
	  • power sources and cables
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment:	• include:
	  • broad knives
	  • caulking guns

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RANGE STATEMENT

	• hammers • measuring tapes and rules • power drills • power leads • screwguns • squares • tin snips • trowels • may include: • C clamps • locking saws and drop saws • masonry drills • saw stools • setting boxes.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials for fire-rated systems include:	• base compound coats • finishing coats • fire grade metal studs and track • fire grade plasterboard sheeting • fire sealants • perforated paper tapes • vermiculite or equivalent product.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Dry wall passive ***fire-rated*** systems are to comply with relevant Australian standards and codes and:	• include: • columns and beams • steel stud two-hour system • may include: • shaft walls • suspended ceilings • timber joist ceilings • timber stud walls.
Fixings and fasteners for	• 30 mm S type screws

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RANGE STATEMENT

installation of fire-rated systems include:	• 30 mm and 40 mm L type screws • 30 mm and 45 mm W type screws • 30 mm, 40 mm, 50 mm, 60 mm plasterboard nails • metal masonry anchors • wafer head screws.
Penetrations include those related to:	• authorised piping • communications • control joints • electrical power.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCWC3004A Install suspended ceilings

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to install exposed and concealed suspended ceilings.

It includes planning and preparation for work; set-out and installation of the ceiling suspension system; installation of lining material; and completion of clean-up activities.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of skills and knowledge to install suspended ceilings while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Set out.	2.1. Ceiling grid is set out to job drawings and in accordance with manufacturer specifications. 2.2. Alignment levels for ceiling are set out as shown on job drawings.
3. Install suspension system.	3.1. Suspension rods are fixed to underside of soffit and structural members with masonry anchors, bolts and screws at prescribed centres and to manufacturers' instructions. 3.2. Suspended framework is assembled and connected to suspension rods in accordance with specifications and manufacturers' instructions. 3.3. ***Suspension system*** is fastened and checked for looseness and rattles. 3.4. Bridging framework is fixed to both sides of service ducts to ***support*** suspension system.
4. Install lining materials.	4.1. Lining materials are installed according to design pattern set out on job drawings, and to specifications. 4.2. Edges of lining materials are cut, concealed or finished to match pre-finished edges. 4.3. Openings and penetrations for lighting, diffuser, hatches and sprinkler heads are provided as shown on

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ELEMENT	PERFORMANCE CRITERIA
	the job drawings.
	4.4. Trims and beads are fixed at junctions with other building elements and surfaces as shown on job drawings.
5. Clean up.	5.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	5.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current

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REQUIRED SKILLS AND KNOWLEDGE

work site environmental and sustainability frameworks and management systems

- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- suspended ceiling installation techniques and processes, including levelling
- suspended ceiling installation, tools and equipment types, uses and limitations
- suspended ceiling materials and their preparation and applications
- wall and ceiling terminology
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations • comply with organisational policies and procedures including quality requirements • safely and effectively operate and use tools, plant and equipment • communicate and work effectively and safely with others • install a minimum of two suspended ceilings, including one exposed and one concealed type to specification.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • workplace location or simulated workplace • materials relevant to the installation of suspended ceilings • hand and power tools and equipment

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EVIDENCE GUIDE

appropriate to the installation of suspended ceilings
- realistic activities covering the mandatory task requirements
- specifications and work instructions.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability

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EVIDENCE GUIDE

and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to the installation of suspended ceilings
- relevant Australian standards
- safe work procedures relating to the installation of suspended ceilings
- signage
- verbal, written and graphical instructions

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RANGE STATEMENT

	• work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • lighting
	  • manual handling
	  • noise, dust and ventilation
	  • power equipment
	  • power sources and cables
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment:	• include:
	  • electric screw guns
	  • hammers
	  • manual levelling devices
	  • measuring tapes and rules
	  • nail bags
	  • power drills

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RANGE STATEMENT

	• power leads
	• power saws
	• spanners
	• spirit levels
	• squares
	• trestles
	• may include:
	  • air compressors and hoses
	  • laser levelling devices
	  • nail guns
	  • planks
	  • pop riveters
	  • system scaffolding.

Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials include:	• base coats • fibre cement sheeting • finishing coats • infill panels and various surfaces • insulation materials • plasterboard • suspended ceiling components.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.

Suspension systems include:	• concealed or exposed
	• components, including:
	  • anchors and bolts
	  • cross beams, rails and runners
	  • droppers and suspension rods
	  • furring channels
	  • main beams, rails and runners
	  • spacer bars.

Support structures include:	• reinforced concrete ceiling and floor slabs • timber and steel floor, ceiling and rod framing.

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Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCWF2001A Handle wall and floor tiling materials

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to handle, store and apply environmental principles to wall and floor tiling products, materials and components.

It includes the preparation, handling, sorting and stacking, distribution and disposal of wall and floor tiling products, materials and components in the application of the tiles to walls and floors.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of skills and knowledge to handle wall and floor tiling materials while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Receive, sort and distribute wall and floor tiling materials.	2.1. On delivery to site, wall and floor ***tiling products***, material and components are identified and checked for conformity to material schedule, plans and specifications. 2.2. Handling characteristics of wall and floor tiling material and components are identified and safe and effective handling techniques are applied in accordance with safe work method statements and OHS workplace operations. 2.3. Wall and floor tiling adhesives are handled, proportioned, mixed and stored in preparation for application in accordance with supervisor's instructions and manufacturer recommendations. 2.4. Wall and floor tiling bedding mortar material is handled, proportioned, mixed and stored in preparation for application in accordance with supervisor's instructions and manufacturer specifications. 2.5. Wall and floor tiling material and components are sorted to suit material type and size, stacked for ease of identification and retrieval for task sequence. 2.6. Wall and floor tiling material and components are

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ELEMENT	PERFORMANCE CRITERIA
	distributed to job location.
3. Handle and remove surplus wall and floor tiling material.	3.1. Materials are handled according to material safety data sheets (MSDS) and requirements of ***statutory and regulatory authorities***. 3.2. Hazardous material is identified for separate handling by authorised personnel. 3.3. Wall and floor tiling material and components are handled, recovered and transferred from job location and stored in designated storage area according to MSDS and workplace requirements.
4. Clean up.	4.1. Work area is cleared and ***waste materials*** are disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 4.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion

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REQUIRED SKILLS AND KNOWLEDGE

procedures

- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- general construction terminology
- handling wall and floor tiling materials techniques
- job safety analysis (JSA) and safe work method statements
- materials storage and environmentally friendly waste management
- MSDS and hazards associated with solvents, adhesives and cement and epoxy-based grouts
- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations
- processes for the calculation of material requirements
- quality requirements
- wall and floor tiling materials, their qualities and applications
- wall and floor tiling processes and sequences
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum, given the plans and specifications for a bathroom wall and floor to be tiled, receive and confirm quantity and quality compliance; handle, sort, stack and distribute the tiles, materials and components to support the performance of the task; prepare and mix the required adhesives and mortar, grouting and finishes required for the job; and clean up and store or dispose of excess and waste materials on the completion of the job, ensuring:
    - correct identification of tiling requirement
    - correct selection and use of appropriate processes, tools and equipment
    - completing all work to specification
    - compliance with regulations, standards and organisational quality procedures and

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EVIDENCE GUIDE

processes.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- workplace location or simulated workplace
- materials relevant to handling wall and floor tiling materials
- hand and power tools, plant and equipment appropriate to handling wall and floor tiling materials
- realistic activities covering the mandatory task requirements
- specifications and work instructions.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and

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EVIDENCE GUIDE

environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches

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RANGE STATEMENT

	• instructions issued by authorised organisational or external personnel • manufacturer specifications and instructions, where specified • MSDS • memos • regulatory and legislative requirements pertaining to handling wall and floor tiling materials • relevant Australian standards • safe work procedures relating to handling wall and floor tiling materials • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • traffic control
	  • restricted access barriers
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others

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RANGE STATEMENT

	• use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.

Tools and equipment:	• include:
	  • scissors
	  • cutting blades
	  • wheelbarrows
	  • ladders
	  • elevated work platforms
	  • brooms
	  • forklifts
	  • pallet jacks
	  • buckets
	• may include:
	  • scaffolds
	  • concrete mixers
	  • adhesive mixers.

Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials include:	• adhesives • caulking compound • cement mortar (with and without additives) • grout • tiles.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Tiling products include:	• ceramic • glass • granite • marble • porcelain • stone • terracotta.
Statutory and regulatory	• federal, state and local authorities

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RANGE STATEMENT

authorities include:	administering the applicable Acts, regulations and codes of practice.
Waste materials include:	• banding straps • broken or damaged goods • cardboard • excess materials • packing pieces • paper • plastic.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCWF2002A Use wall and floor tiling tools and equipment

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to safely and effectively use tools and equipment specific to ceramic wall and floor tiling work.

It includes identification, selection and use of tools for specific applications.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of skills and knowledge to use wall and floor tiling tools and equipment while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Identify hand and power tools.	2.1. ***Hand and power tools***, their functions, operations and limitations are identified. 2.2. OHS requirements for using hand tools are recognised and adhered to. 2.3. OHS requirements for using power tools are recognised and adhered to.
3. Select tools for project.	3.1. ***Tools and equipment*** are selected consistent with job and ***quality requirements***. 3.2. Tools, including leads and hoses, are checked for current tags, serviceability and safety and any faults reported in accordance with workplace procedures. 3.3. Power tools guards, couplings, gauges and controls are checked and maintained in accordance with manufacturer recommendations and workplace procedures. 3.4. Equipment to hold or support material during operation is selected. 3.5. Pre-operational checks, including lubricants, hydraulic fluid and water, are completed in accordance with manufacturer recommendations.
4. Use tools.	4.1. Power and compressed air supply is connected to work area. 4.2. Start-up and shut-down procedures are performed in accordance with workplace procedures. 4.3. Tools are safely and effectively used according to manufacturer recommendations and regulatory and workplace requirements. 4.4. Tools are safely located and switched when not in immediate use.
5. Select plant and	5.1. Functions and limitations of plant and equipment

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ELEMENT	PERFORMANCE CRITERIA
equipment.	used in wall and floor tiling are identified. 5.2. Method of operation of plant and equipment is identified. 5.3. Plant and equipment are checked for safety, and faults reported to supervisor in accordance with workplace procedures. 5.4. Plant and equipment requirements for guarding, cut off switches, couplings, gauges and controls are checked in accordance with workplace procedures. 5.5. Plant and equipment are selected consistent with hazard minimisation and needs of job. 5.6. Requirements for operating and using plant and equipment are recognised and adhered to in accordance with workplace procedures.
6. Use plant and equipment.	6.1. Plant and equipment are safely and effectively used. 6.2. Plant and equipment are safely located and switched off when not in immediate use. 6.3. Tools and equipment are inspected, maintained, tagged and faults reported in accordance with workplace procedures.
7. Clean up.	7.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 7.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:

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REQUIRED SKILLS AND KNOWLEDGE

  - documentation from a variety of sources
  - drawings and specifications
- recognise procedures
- report faults
- enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication, such as hand signals
- written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- characteristics and applications of wall and floor tiling tools and equipment
- general construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- measuring and marking
- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations
- processes for the calculation of material requirements
- quality requirements
- techniques and procedures for using wall and floor tiling tools and equipment
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum, follow work instructions, operating procedures and inspection practices to use the wall and floor tiling tools and equipment listed in the range statement for their appropriate application, ensuring:
  - correct identification, selection and use of appropriate processes, tools and equipment
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

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EVIDENCE GUIDE

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- workplace location or simulated workplace
- materials relevant to using wall and floor tiling tools and equipment
- hand and power tools, plant and equipment appropriate to using wall and floor tiling tools and equipment
- realistic activities covering the mandatory task requirements
- specifications and work instructions.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role

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EVIDENCE GUIDE

and the practical requirements of the workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS

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RANGE STATEMENT

	• memos • regulatory and legislative requirements pertaining to using wall and floor tiling tools and equipment • relevant Australian standards • safe work procedures relating to using wall and floor tiling tools and equipment • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • traffic control
	  • restricted access barriers
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

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RANGE STATEMENT

Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Selection and operation of ***hand and power tools*** and equipment involve:	• correct application • effective operation • identification.

Tools and equipment:	• include:
	  • buckets
	  • caulking guns
	  • levelling equipment:
	  • straight edges
	  • line levels
	  • stringlines
	  • spirit levels
	  • water levels
	  • lump hammers
	  • measuring tapes and rules
	  • nippers
	  • pointed grouters
	  • rags
	  • rubber mallets
	  • scrapers
	  • shovels
	  • spacers and wedges
	  • sponges
	  • squares
	  • squeegees
	  • straight edges
	  • tile cutters and scribes
	  • trowels
	  • wet and dry diamond saws
	  • wooden floats
	• may include:
	  • adhesive mixers
	  • beating machines
	  • concrete mixers
	  • grouting machines

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RANGE STATEMENT

	• masonry drill bits
	• screeding machines
	• plant and equipment, including:
	  • small petrol or diesel engines
	  • small compressors
	• power tools, including:
	  • power drills
	  • power leads
	• small generators.

Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCWF3001A Prepare surfaces for tiling application

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to repair and prepare different substrates for wall and floor tiling applications.

It includes the preparation of materials and substrates for the tiling process.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of skills and knowledge to prepare surfaces for tiling application while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Prepare materials for tiling application.	2.1. Floor and wall tiling materials are checked for product suitability, conformity to specification and compatibility with surface material, preparation and installation technique. 2.2. Activities for material preparation are identified from specifications, and manufacturers' or supervisor's instructions. 2.3. Material preparation is carried out to satisfy the requirements of the application process.
3. Prepare underlay and sheeting substrate.	3.1. Assistance with ***underlay*** preparation is provided under instructions and supervision. 3.2. ***Substrate surface*** is finished to approved surface standards with joints flush and sealed.
4. Prepare render substrate surface.	4.1. ***Surface-mounted construction*** units and attachments are safely detached, removed or arranged for removal from area and stored. 4.2. Substrate structure is identified and surfaces are cleaned to remove all contaminants and loose material in accordance with supervisor's instructions. 4.3. Materials for splash coat are proportioned and mixed to instructions ready for application to wet surface.

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ELEMENT	PERFORMANCE CRITERIA
	4.4. Horizontal and vertical surrounds are prepared for tiling process in accordance with ***type of tile*** and specified finish.
	4.5. Materials for render coat are proportioned and mixed to instructions ready for application.
	4.6. ***Surface*** is scratched, rendered, cured and dried to instructions in accordance with specifications for tile application.
5. Clean up.	5.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	5.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements

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REQUIRED SKILLS AND KNOWLEDGE

- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- general construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations
- processes for the calculation of material requirements
- quality requirements
- surface preparation materials and techniques
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum (using a combination of underlay, render and mechanical and chemical techniques), prepare a bathroom work area for wall and floor tiling; prepare a timber bathroom floor and pointed fibre cement sheet wall for tiling; and prepare a concrete bathroom floor and pointed fibre cement sheet wall for tiling, ensuring:
  - correct identification of requirement and completion of the preparation
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes.

Context of and specific

This competency is to be assessed using standard

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EVIDENCE GUIDE

resources for assessment	and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • workplace location or simulated workplace • materials relevant to preparing surfaces for tiling • hand and power tools, plant and equipment appropriate to preparing surfaces for tiling • realistic activities covering the mandatory task requirements • specifications and work instructions. Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that:

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EVIDENCE GUIDE

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions,

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RANGE STATEMENT

	where specified • MSDS • memos • regulatory and legislative requirements pertaining to preparing surfaces for tiling • relevant Australian standards • safe work procedures relating to preparing surfaces for tiling • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • traffic control
	  • restricted access barriers
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

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RANGE STATEMENT

Tools and equipment include:	• brooms • brushes • buckets • caulking guns • cement sheet cutters • concrete mixers • electrical leads • hammers • hose and water sprays • ladders • levelling equipment • lump hammers • measuring tapes and rules • mortar boards • nippers • pointed grouters • power drills and screwdrivers • power grinders and sanders • rags • rubber mallets • sanding blocks • saws • scrapers • shovels • spacers and wedges • spatulas • sponges • squares • squeegees • straight edges • stringlines • trowels • wet and dry diamond saws • wheelbarrows • wire brushes • wooden floats • work platforms.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications

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RANGE STATEMENT

	• workplace operations and procedures.

Materials:	• include:
	  • adhesives
	  • caulking compound
	  • cement mortar (with and without additives)
	  • clouts
	  • cornice adhesive
	  • fixings and fasteners
	  • patching materials
	  • plasterboard nails
	  • pre-mixed and mixed fillers
	  • sand and cement
	  • self-tapping screws
	  • soft sheet nails
	  • wall board adhesive
	• may include:
	  • acoustic underlay material
	  • crack suppression membrane.

Environmental requirements include:	• clean-up management • dust and noise • sedimentation control • vibration • waste management.
Underlay material may be:	• acoustic • in sheet or liquid form • provide for crack suppression (in membrane form).
Substrate preparation includes:	• chemical and mechanical preparation of surfaces • rendering to provide a flat surface • use of underlay material.
Substrate surface materials include:	• fibre cement sheets or other lining material or cladding of a similar nature • painted surfaces • pre-cast cladding • solid plaster • stone, concrete, timber, waterproof plasterboard, masonry and brick/block • terrazzo

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RANGE STATEMENT

Surface-mounted construction includes:	• wall and floor tiles. • aluminium framework fixing • attachment of steel brackets or fabricated units • brick or block walls or abutments • curtain walling fixing • fitment units • formwork and falsework construction • light steel partition walls • stair installations • timber partition walls.
Types of tiles include:	• ceramic • glass • granite • marble • porcelain • stone • terracotta.
Surfaces include:	• blockwork • brickwork • ceramic or fibro cement underlay • concrete walls • fibre cement sheet • rendered surfaces • timber • other approved waterproof surfaces.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Co-requisite units Nil

Functional area

Functional area

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CPCCWF3002A Fix floor tiles

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to fix floor tiles to different substrates using mortar or adhesive.

It includes the preparation, cutting, fixing and grouting of tiles for floors, including steps/stairs and thresholds.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of skills and knowledge to fix floor tiles while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Set out tiling job.	2.1. Area to be tiled is prepared to requirements of job specification in accordance with workplace procedures. 2.2. ***Tiles*** are checked for conformity to size, patterns, colours and characteristics in accordance with plans and specifications. 2.3. Tile work is set out to be symmetrical and balanced, and to produce minimal waste in accordance with specifications and standards. 2.4. Waterproof membrane is fitted and laid in wet areas to conform to manufacturer specifications and regulatory requirements.
3. Cut tiles as required.	3.1. Tiles are cut without jagged, flaid edges or damage to tile surfaces or finish, in accordance with workplace procedures and manufacturer recommendations. 3.2. Recess hole or curve is cut by hand or machine to shape and size and to specified tolerance. 3.3. Tile jolly is edged to form a mitre so that biscuit is not exposed at the joint in accordance with workplace procedures and manufacturer recommendations.
4. Lay and fix floor	4.1. Floor is checked for level/falls and square and

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ELEMENT	PERFORMANCE CRITERIA
tiles.	membranes or underlay are installed in accordance with workplace procedures and manufacturer recommendations.
	4.2. ***Substrate*** surface is prepared free from contaminants and residues to receive adhesive or screeded mortar in accordance with plans and specifications.
	4.3. Tiles are checked for conformity to size, patterns, colours and characteristics in accordance with plans and specifications.
	4.4. Adhesive is matched with tile and substrate material and mixed according to usage, climatic conditions and manufacturer specifications.
	4.5. Cement mortar is prepared to appropriate consistency and floor is slurried and screeded to specifications.
	4.6. Tiles are laid and ***fixed*** in conformance to standards and specifications, maintaining bond with joints that are uniform in size and a finished surface that is flat and smooth or to fulls.
	4.7. Control joints are inserted in accordance with manufacturer specifications.
5. Tile treads, risers, steps and thresholds.	5.1. Step rises and goings are determined from formed concrete steps/stairs.
	5.2. Steps are set out for uniform rise and make even cut on both sides of steps.
	5.3. Step riser packing or render support is fixed where applicable and riser tiles are fixed to true alignment and uniform set out.
	5.4. Treads infill and thresholds are fixed in line with the top edge of risers within specified tolerances.
6. Grout and seal tiles.	6.1. Joints are cleaned and prepared to receive grout according to manufacturer specifications.
	6.2. ***Grout*** is mixed and applied in accordance with workplace and manufacturer specifications and to meet job requirements.
	6.3. Tiles are cleaned and polished with dry cloth to specifications, removing all dust from surface and joints.
	6.4. Tiles are sealed and protected in accordance with manufacturers' instructions and job specifications.
7. Clean up.	7.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.

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ELEMENT	PERFORMANCE CRITERIA
	7.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones

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REQUIRED SKILLS AND KNOWLEDGE

- voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- control joints
- general construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS) and hazards associated with solvents, adhesives and cement or epoxy-based grouts
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations
- processes for the calculation of material requirements
- quality requirements
- techniques in fixing tiles to floors and step/stairs, including preparation of substrates
- tiling materials, including tiles, adhesives, mortar, grouting and substrates, their qualities, characteristics, preparation, techniques, applications, limitations and finishing
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum:
  - tile 4 square metres of a concrete bathroom floor using a sand and cement mortar mix
  - tile 4 square metres of a timber floor, laid on the diagonal with a half tile border, using adhesive
  - tile 4 square metres of a concrete floor with marble tiles, using adhesive
  - tile a minimum of three steps of 900mm width and 115mm risers and treads, including an expansion joint
- ensuring:
  - correct identification of requirement and completion of the tiling
  - correct selection and use of appropriate processes, tools and equipment

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EVIDENCE GUIDE

- completing all work to specification
- compliance with regulations, standards and organisational quality procedures and processes.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- workplace location or simulated workplace
- materials relevant to fixing floor tiles
- hand and power tools, plant and equipment appropriate to fixing floor tiles
- realistic activities covering the mandatory task requirements
- specifications and work instructions.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles

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EVIDENCE GUIDE

- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

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RANGE STATEMENT

Information includes:	• diagrams or sketches • instructions issued by authorised organisational or external personnel • manufacturer specifications and instructions, where specified • MSDS • memos • regulatory and legislative requirements pertaining to fixing floor tiles • relevant Australian standards • safe work procedures relating to fixing floor tiles • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • traffic control
	  • restricted access barriers
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others

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RANGE STATEMENT

	• use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.

Tools and equipment:	• include:
	  • brooms
	  • brushes
	  • buckets
	  • caulking guns
	  • cement sheet cutters
	  • hammers
	  • hose and water sprays
	  • ladders
	  • levelling equipment
	  • lump hammers
	  • measuring tapes and rules
	  • mortar boards
	  • nippers
	  • pointed grouters
	  • power drills
	  • power leads
	  • rags
	  • rubber mallets
	  • sanding blocks
	  • saws
	  • scrapers
	  • shovels
	  • spacers and wedges
	  • spatulas
	  • sponges
	  • squares
	  • squeegees
	  • straight edges
	  • stringlines
	  • tile cutters and scribes
	  • trowels
	  • wet and dry diamond saws
	  • wheelbarrows

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RANGE STATEMENT

	• wire brushes • wooden floats • may include: • concrete mixers • masonry drill bits • power grinders • power sanders.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials include:	• adhesives • caulking compounds • cement mortar (with and without additives) • grout • sealers • tiles.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Types of ***tiles*** include:	• ceramic • glass • granite • marble • porcelain • stone • terracotta.
Substrates include:	• approved waterproof substrates • compressed FC sheeting • concrete • fibre cement underlay • rendered concrete • timber.
Tiles are ***fixed*** using:	• adhesives • cement mortar • cement mortar with adhesive additive.
Grout may be:	• cementitious • epoxy.

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Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCWF3003A Fix wall tiles

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to fix wall tiles to differing substrates, using mortar or adhesive.

It includes the preparation, cutting, fixing and grouting of tiles for walls, including internal and external wall junctions and between wall and floor junctions.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of skills and knowledge to fix wall tiles while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Set out tiling job.	2.1. Area to be tiled and ***substrate*** are prepared to requirements of job specification and in accordance with workplace procedures. 2.2. ***Tiles*** are checked for conformity to size, patterns, colours and characteristics in accordance with plans and specifications. 2.3. Tile work grid patterns are determined and set out to be symmetrical and balanced, and to produce minimal waste in accordance with specifications and standards. 2.4. Waterproof membrane is fitted and laid in wet areas to conform to manufacturer specifications and regulatory requirements.
3. Cut tiles as required.	3.1. Tiles are cut without jagged, flaid edges or damage to tile surfaces or finish, in accordance with workplace procedures and manufacturer recommendations. 3.2. Recess hole or curve is cut by hand or machine to shape and size and to specified tolerance. 3.3. Tile jolly is edged to form a mitre so that biscuit is not exposed at the joint in accordance with workplace procedures and manufacturer recommendations.
4. Fix wall tiles.	4.1. Mortar and/or adhesive is prepared and applied to tile

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ELEMENT	PERFORMANCE CRITERIA
	surface in accordance with manufacturer recommendations.
	4.2. Tiles are prepared and fixed, with pad tiles set to level alignment.
	4.3. Horizontal joint is checked for straightness, and tile edges and surface alignment are checked for conformity.
	4.4. Tiles are ***fixed*** to alignment maintaining designed pattern to specification.
	4.5. Even margins are shown around openings, frames and fittings to specification.
	4.6. Bottom course is cut and fixed to create a rake or square corner in accordance with drawings and specifications.
	4.7. Splayed, manufactured, formed coves are fixed in accordance with drawings and specifications.
	4.8. Vertical tiles are finished plumb and true to square corners.
	4.9. Joints are maintained straight and uniform in width with due allowance for tolerance of tile sizes.
	4.10. Control joints are built in, in accordance with specifications and manufacturer recommendations.
	4.11. Mitre joints are made, maintaining glazing on mitre without damage to tile surfaces or finish and maintaining uniformity of mitre in accordance with company procedures and manufacturer recommendations.
5. Tile external corners.	5.1. Setting out for plumb, level and square is checked to be within specified tolerance.
	5.2. External corners are checked to ensure surface intersections are straight.
	5.3. Curved bead angle trim or tiles are fixed so that external return and bead are square and measurements are accurate to junction with tiles and set out, where applicable.
	5.4. Tiles are fixed with minimum voids in tile bed while maintaining fully bedded alignment to specifications.
	5.5. Corner is kept square within specified tolerance and finish to specifications.
6. Tile internal corners.	6.1. Internal corner is checked to ensure surfaces are flat and intersection is straight.
	6.2. Tiles are cut where required and fixed to one wall to

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ELEMENT	PERFORMANCE CRITERIA
	maintain alignment in accordance with set out and specifications.
	6.3. Tiles are cut where required and fixed abutting adjacent wall tiles to line, set out and specifications.
	6.4. Joints for abutting tiles are made in accordance with designed margin for grouting or for expansion joint, where applicable, to specifications.
	6.5. Coved tile or trim is installed to coved internal wall or wall and floor junctions.
	6.6. Coved tile or trim is installed so that line is straight and, where applicable, aligned with set out.
	6.7. Tiles are fixed to cove tile or trim and finish to alignment and specifications.
7. Grout wall tile face.	7.1. Joints are cleaned and prepared to receive grout according to manufacturer specifications.
	7.2. ***Grout*** is mixed and applied in accordance with workplace and manufacturer specifications and to meet job requirements.
	7.3. Tiles are cleaned and polished with dry cloth to specifications, removing all dust from surface and joints.
8. Clean up.	8.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	8.2. Machinery, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions

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REQUIRED SKILLS AND KNOWLEDGE

- read and interpret:
  - documentation from a variety of sources
  - drawings and specifications
- recognise procedures
- report faults
- enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication, such as hand signals
- written skills to record results of checks and tests and relevant work completion procedures

- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- control joints
- general construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS) and hazards associated with solvents, adhesives and cement or epoxy-based grouts
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations
- processes for the calculation of material requirements
- quality requirements
- techniques in fixing tiles to walls and corners, including preparation of substrates
- tiling materials, including tiles, adhesives, mortar, grouting and substrates, their qualities, characteristics, preparation, techniques, applications, limitations and finishing

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REQUIRED SKILLS AND KNOWLEDGE

- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum:
  - tile the front and return of a standard 1500mm timber framed bath, including a straight hob between the bath and wall, using adhesive to fix the tiles; tiles are not to be proud of the bath and coving to floor is to allow for control joints as required
  - tile the front and return of a standard 1500mm bricked bath, including a straight hob between the bath and wall, using mortar to fix the tiles; tiles are not to be proud of the bath and coving to floor is to allow for control joints as required
- work to be completed ensuring:
  - correct identification of requirement and completion of the tiling
  - correct selection and use of appropriate

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EVIDENCE GUIDE

processes, tools and equipment
- completing all work to specification
- compliance with regulations, standards and organisational quality procedures and processes.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- workplace location or simulated workplace
- materials relevant to fixing wall tiles
- hand and power tools, plant and equipment appropriate to fixing wall tiles
- realistic activities covering the mandatory task requirements
- specifications and work instructions.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills

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EVIDENCE GUIDE

with workplace tasks and job roles

- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and

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RANGE STATEMENT

regional contexts) may also be included.

Information includes:	• diagrams or sketches • instructions issued by authorised organisational or external personnel • manufacturer specifications and instructions, where specified • MSDS • memos • regulatory and legislative requirements pertaining to fixing wall tiles • relevant Australian standards • safe work procedures relating to fixing wall tiles • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • traffic control
	  • restricted access barriers
	  • trip hazards
	  • work site visitors and the public
	  • working at heights

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RANGE STATEMENT

	• working in confined spaces • working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment:	• include: • brooms • brushes • buckets • caulking guns • cement sheet cutters • hammers • hose and water sprays • ladders • levelling equipment • lump hammers • measuring tapes and rules • mortar boards • nippers • pointed grouters • power drills • power leads • rags • rubber mallets • sanding blocks • saws • scrapers • shovels • spacers and wedges • spatulas • sponges • squares • squeegees • straight edges • stringlines • tile cutters and scribes • trowels

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RANGE STATEMENT

	• wet and dry diamond saws • wheelbarrows • wire brushes • wooden floats • may include: • concrete mixers • masonry drill bits • power grinders • power sanders.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials include:	• adhesives • caulking compound • cement mortar (with and without additives) • grout • tiles.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Substrate includes:	• approved waterproof substrates • blockwork • brickwork • concrete • fibre cement sheet • rendered surfaces • timber.
Types of ***tiles*** include:	• ceramic • glass • granite • marble • porcelain • stone • terracotta.
Tiles may be ***fixed*** using:	• adhesives • cement mortar • cement mortar with adhesive additive.

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RANGE STATEMENT

Grout may be:	• cementitious • epoxy.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCWF3004A Repair wall and floor tiles

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to repair wall and floor, using mortar or adhesive.

It includes preparing, removing and replacing wall and floor tiles.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of skills and knowledge to repair wall and floor tiles while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Repair damaged tilework.	2.1. ***Damaged or defective*** tiles are removed avoiding damage to surrounding tiles. 2.2. Old bedding is cleaned and cleared to allow placement of replacement tile. 2.3. Replacement ***tiles*** are selected and cut where applicable to match existing face, size, colour and pattern. 2.4. Tiles are fitted and ***fixed*** to maintain alignment with joints to uniform spacing. 2.5. Grouting is carried out and tile face cleaned to specified finish.
3. Clean up.	3.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 3.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- general construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS) and hazards associated with solvents, adhesives and cement or epoxy-based grouts
- materials storage and environmentally friendly waste management

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REQUIRED SKILLS AND KNOWLEDGE

- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations
- processes for the calculation of material requirements
- quality requirements
- techniques in removing and replacing tiles to walls and floors
- tiling materials, including tiles, adhesives, mortar, grouting and substrates, their qualities, characteristics, preparation, techniques, applications, limitations and finishing
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum remove and replace a quantity of damaged wall tiles, which are fixed with adhesive bedding; and remove and replace a quantity of damaged floor tiles, which are fixed with mortar bedding, ensuring:
  - correct identification of requirement and replacement of the tiles
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

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EVIDENCE GUIDE

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- workplace location or simulated workplace
- materials relevant to repairing floor and wall tiles
- hand and power tools, plant and equipment appropriate to repairing floor and wall tiles
- realistic activities covering the mandatory task requirements
- specifications and work instructions.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the

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EVIDENCE GUIDE

workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos

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RANGE STATEMENT

	• regulatory and legislative requirements pertaining to repairing wall and floor tiles • relevant Australian standards • safe work procedures relating to repairing wall and floor tiles • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • traffic control
	  • restricted access barriers
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment:	• include: • brooms

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RANGE STATEMENT

- brushes
- buckets
- caulking guns
- cement sheet cutters
- hammers
- hose and water sprays
- ladders
- levelling equipment
- lump hammers
- measuring tapes and rules
- mortar boards
- nippers
- pointed grouters
- power drills
- power leads
- rags
- rubber mallets
- sanding blocks
- saws
- scrapers
- shovels
- spacers and wedges
- spatulas
- sponges
- squares
- squeegees
- straight edges
- stringlines
- tile cutters and scribes
- trowels
- wet and dry diamond saws
- wheelbarrows
- wire brushes
- wooden floats

- may include:
  - concrete mixers
  - masonry drill bits
  - power grinders

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RANGE STATEMENT

	• power sanders.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials include:	• adhesives • caulking compound • cement mortar (with and without additives) • grout • tiles.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Damages and defects include:	• chips or dents • cracks and splits • holes • loose and flaked surface materials • material drumming • missing, cracked or damaged substrate or tiles • rough imperfect surfaces • surface depressions or dents.
Types of ***tiles*** include:	• ceramic • glass • granite • marble • porcelain • stone • terracotta.
Tiles may be ***fixed*** using:	• adhesives • cement mortar • cement mortar with adhesive additive.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCWF3005A Carry out decorative tiling

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to locate and set out dimensions and plans for decorative tiling projects, to form a specific pattern and meet client requirements.

It includes identifying, setting out, cutting and laying out tiles to walls and floors where advanced setting out is required to align wall and floor joints, including heritage tiles.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of skills and knowledge to carry out decorative tiling while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Prepare pattern and materials for tiling.	2.1. Suitable architectural or historical period is identified and a range of appropriate ***patterns*** is produced. 2.2. Style of tile is selected to conform with the elements of design. 2.3. Colour and shape of tile are selected to conform with specifications and the geometry of the project. 2.4. Details of pattern and selected ***tiles*** are confirmed with ***client***.
3. Form decorative design.	3.1. Tiles are set out to required shape and size to conform to pattern and ***decorative design***. 3.2. Examples of border, beading and strip returns are laid out. 3.3. Tiles are cut, as necessary, to complete the pattern set out. 3.4. Wall and floor tile joints are aligned plumb and square and cut tiles are positioned.
4. Prepare substrate.	4.1. ***Substrate surfaces*** are prepared to specification and standard. 4.2. Location of tiles is set out or marked directly onto

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ELEMENT	PERFORMANCE CRITERIA
	the surface in accordance with job drawings and specification.
5. Fix tiles.	5.1. Adhesive/mortar is applied to set out area. 5.2. Wall tiles are laid from a selected position to ensure correct set out. 5.3. Floor tiles are set out and laid from the centre, if necessary, to even set out. 5.4. Border tiles are laid and adjusted to suit set out. 5.5. Surface is finished in accordance with job specifications.
6. Grout tiles.	6.1. Tiled surface is cleaned free of dust and adhesive. 6.2. Grout is mixed and applied in accordance with manufacturer specifications and to meet job requirements. 6.3. Finished surface is cleaned and polished with dry cloth to specifications.
7. Clean up.	7.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 7.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures

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REQUIRED SKILLS AND KNOWLEDGE

- report faults
- enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication, such as hand signals
- written skills to record results of checks and tests and relevant work completion procedures

- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- decorative tiling materials, including tiles, adhesives, mortar, grouting and substrates, their characteristics, preparation, methods, application and finishing
- decorative tiling techniques
- design reproduction and application methods
- general construction terminology
- heritage tiles and patterns
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS) and hazards associated with solvents, adhesives and cement or epoxy-based grouts
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations
- processes for the calculation of material requirements
- quality requirements
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum, select, set out and lay heritage style wall tiles and decorative strips to a 2 square metre wall finished to differing heights; and select, set out and lay tessellated floor tiles and a decorative border to an L-shaped area of approximately 1.5 square metres, ensuring:
  - correct identification of requirement and completion of the tiling
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements

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EVIDENCE GUIDE

and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- workplace location or simulated workplace
- materials relevant to decorative tiling
- hand and power tools, plant and equipment appropriate to decorative tiling
- realistic activities covering the mandatory task requirements
- specifications and work instructions.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role

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EVIDENCE GUIDE

and the practical requirements of the workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS

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RANGE STATEMENT

	• memos • regulatory and legislative requirements pertaining to decorative tiling • relevant Australian standards • safe work procedures relating to decorative tiling • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • traffic control
	  • restricted access barriers
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment:	• include:

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RANGE STATEMENT

- buckets
- caulking guns
- levelling equipment
- lump hammers
- measuring tapes and rules
- meter heating devices
- nippers
- pointed grouters
- power drills
- rags
- rubber mallets
- scrapers
- shovels
- spacers and wedges
- sponges
- squares
- squeegees
- straight edges
- stringlines
- tile cutters and scribes
- trowels
- wooden floats

- may include:
  - concrete mixers
  - masonry drill bits.

Quality requirements include relevant regulations, including:

- Australian standards
- internal company quality policy and standards
- manufacturer specifications
- workplace operations and procedures.

Materials include:

- adhesives
- caulking compound
- cement mortar (with and without additives)
- grout
- patterns
- tiles.

Environmental requirements include:

- clean-up management
- dust and noise
- vibration

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RANGE STATEMENT

	• waste management.
Patterns are to be formed from:	• principles of design relating to the architectural style required.
Types of ***tiles*** include:	• ceramic • glass • porcelain • stone • terracotta • tessellated.
Client includes:	• a builder • a customer • an architect • an interior designer.
Decorative design is to conform to:	• advanced setting out techniques to achieve a whole room joint alignment or heritage effect.
Substrate surfaces include:	• fibre cement sheet • brickwork • blockwork • concrete walls • timber • rendered surfaces • other waterproof surfaces.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCWF3006A Carry out mosaic tiling

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to fix a mosaic directly into place to a tiled wall or floor.

It includes the cutting and laying out of a pattern or template and the application of the tiles to the required area.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of skills and knowledge to carry out mosaic tiling while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Prepare materials.	2.1. Work area for mosaic fixing is prepared for the requirements of the task. 2.2. Mosaic sheets are checked for conformity to size, pattern, colour and characteristics in accordance with plans and specifications. 2.3. Mosaic work is set out to be symmetrical, balanced and produce minimal waste in accordance with specifications and standards. 2.4. Adhesive is selected, prepared and mixed in accordance with standard work practices, manufacturer recommendations and specifications.
3. Prepare substrate.	3.1. ***Substrate*** surfaces are prepared for application of render. 3.2. Render is mixed to specification. 3.3. Substrate surfaces are rendered to specified thickness, standard and finish. 3.4. Surface is cleaned free of contaminants and loose material ready for tile application.
4. Fix mosaic to flat surfaces.	4.1. Prepared mosaic sheets or tiles are marked to identify the section of application.

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ELEMENT	PERFORMANCE CRITERIA
	4.2. Appropriate fixing medium is selected to ensure light coloured tiles are not darkened.
	4.3. ***Fixing*** medium is applied to substrate and mosaic sheets or tiles are laid in accordance with manufacturer specifications, maintaining alignment to set out lines and face surface of tiles, to the specified finish.
	4.4. Mosaic tiles are positioned prior to final set and adjusted to ensure the specified mosaic lines and spaces are consistent.
	4.5. ***Surface*** is finished so that the face of tiles is flush and the surface is flat.
5. Fix mosaic to curved surfaces.	5.1. Extent of curve is established from site inspection.
	5.2. Datum line is set out around wall.
	5.3. ***Tiles*** are set out to determine design balance and to identify any cutting requirement.
	5.4. Template is made to form the finished curve of the tiled surface.
	5.5. Tile laying method is determined, and the location of the first tile is identified.
	5.6. Render is mixed to specifications.
	5.7. Substrate surfaces are rendered to specified thickness and finished to prepared template.
	5.8. Mortar and/or adhesive is prepared to manufacturer specifications.
	5.9. Tiles are fixed level, plumb, flush and square in accordance with specifications.
	5.10. Horizontally laid tiles are set out to grid with perimeter tiles marked and cut to fit curve lines.
6. Fix mosaic to a circular column.	6.1. Surface is prepared and cleaned for render application.
	6.2. Template is prepared for the diameter profile of column.
	6.3. Render is mixed to specifications.
	6.4. Render is applied to specified thickness and finished to prepared template.
	6.5. Template is prepared for diameter profile of finished tiled face.
	6.6. Mosaic sheet or tiles are fixed to column, maintaining an even spacing and plumb and level finish, to specification.

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ELEMENT	PERFORMANCE CRITERIA
7. Grout tile face.	7.1. Tiled surface is cleaned free of dust and adhesive. 7.2. Oxides are selected and grout is mixed and applied to mosaic surface in accordance with manufacturer specifications and to meet job requirements. 7.3. Finished mosaic surface is cleaned and polished with dry cloth to specifications.
8. Clean up.	8.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 8.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools,

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REQUIRED SKILLS AND KNOWLEDGE

equipment or materials

- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- general construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS) and hazards associated with solvents, adhesives and cement or epoxy-based grouts
- materials storage and environmentally friendly waste management
- mosaic tiling materials, including tiles, adhesives, mortar, grouting and substrates, their characteristics, preparation, methods, application and finishing
- mosaic tiling methods and set out procedures
- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations
- processes for the calculation of material requirements
- quality requirements
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum, prepare and lay 2 square metres of mosaic tile (half in adhesive and half in render and lay) for a bathroom wall; prepare and lay mosaic tile to a hob and return; and prepare and lay paper-based mosaic tile to a column of more than 360mm radius and at least 1m high, ensuring:
  - correct identification of requirement and completion of the tiling
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes.

Context of and specific

This competency is to be assessed using standard and authorised work practices, safety requirements

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EVIDENCE GUIDE

resources for assessment	and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • workplace location or simulated workplace • materials relevant to mosaic tiling • hand and power tools, plant and equipment appropriate to mosaic tiling • realistic activities covering the mandatory task requirements • specifications and work instructions. Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role

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EVIDENCE GUIDE

and the practical requirements of the workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS

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RANGE STATEMENT

	• memos • regulatory and legislative requirements pertaining to mosaic tiling • relevant Australian standards • safe work procedures relating to mosaic tiling • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • traffic control
	  • restricted access barriers
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment:	• include: • buckets

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RANGE STATEMENT

	• caulking guns • levelling equipment • lump hammers • measuring tapes and rules • nippers • pointed grouters • power drills • rags • rubber mallets • scrapers • shovels • spacers and wedges • sponges • squares • squeegees • straight edges • stringlines • tile cutters and scribes • trowels • wooden floats • may include: • concrete mixers • masonry drill bits.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials include:	• adhesives • caulking compound • cement mortar (with and without additives) • grout • mosaic sheet • paper • paper-faced mosaic • tiles.
Environmental requirements include:	• clean-up management • dust and noise • vibration

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RANGE STATEMENT

	• waste management.

Substrates:	• include:
	  • blockwork
	  • brickwork
	  • concrete walls
	  • fibre cement sheet
	  • timber
	• may include:
	  • approved waterproof surfaces.

Tiles may be ***fixed*** using:	• adhesives • cement mortar • cement mortar with adhesive additive.
Surfaces include:	• circular • curved horizontal • curved vertical • flat horizontal • flat vertical.
Tiles include:	• ceramic • glass • granite • marble • porcelain • stone • terracotta.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCWF3007A Tile curved surfaces

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to tile curved surfaces on solid and sheet substrate, using mortar or adhesive.

It includes the preparation for and tiling of curved wall and floor surfaces, columns, circular walls and arches.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of skills and knowledge to tile curved surfaces while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Tile curved wall and floor surfaces.	2.1. Extent of curve is established from site inspection. 2.2. Levelling equipment is used for intermediate marking to level line set out around wall. 2.3. Location of tiles is set out to determine balanced design and identify cutting requirements. 2.4. ***Template*** is made to form an accurate curve line for tiled surface around ***wall***. 2.5. Required method of laying ***tiles*** is determined by identification of location of first tile. 2.6. Mortar and/or adhesive is prepared where applicable to manufacturer specifications. 2.7. Pad tiles are ***fixed*** to level set out, template curve and specifications. 2.8. Minimum voids are maintained in mortar tile beds and tiles are fixed level, plumb (wall), flush and square. 2.9. Floor tiles are laid to set out grid with perimeter tiles marked and cut to fit curved wall. 2.10. Grout is mixed and applied to joints according to specifications, to provide flush and smooth finish.

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ELEMENT	PERFORMANCE CRITERIA
	2.11. Tiled surface is polished to specifications.
3. Tile circular columns, walls and arches.	3.1. Template is set out and cut to ensure conformity to tile surface for curve. 3.2. Pad tiles are positioned accurately and fixed to line, to maintain uniform spacing. 3.3. Tiles are marked out accurately where applicable and fixed into place, to specifications. 3.4. Tiles are fixed on walls, plumb, maintaining levels and curvature of wall to specifications. 3.5. Line and curvature are maintained to specifications when fixing tiles to archways. 3.6. Grout is mixed and applied to joints, and tile surface is finished to specifications.
4. Clean up.	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 4.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand

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REQUIRED SKILLS AND KNOWLEDGE

- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication, such as hand signals
- written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- general construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS) and hazards associated with solvents, adhesives and cement or epoxy-based grouts
- materials storage and environmentally friendly waste management
- measurement and calculations
- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations
- processes for the calculation of material requirements
- quality requirements
- techniques for setting out and fixing tiles to curved surfaces
- tiling materials, including tiles, adhesives, mortar, grouting and substrates, their qualities, characteristics, preparation, techniques, applications, limitations and finishing
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum, tile a circular concrete column of a minimum of 360mm diameter and 1m high abutting a concrete flat wall, continuing the tiling to the floor (to 150mm radius) from the column; and tile a standard door archway in a fibre cement sheet wall, including vertical returns and soffit; ensuring:
  - correct identification of requirement and completion of the tiling
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes.

Context of and specific

This competency is to be assessed using standard and authorised work practices, safety requirements

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EVIDENCE GUIDE

resources for assessment	and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • workplace location or simulated workplace • materials relevant to tiling curved surfaces • hand and power tools, plant and equipment appropriate to tiling curved surfaces • realistic activities covering the mandatory task requirements • specifications and work instructions. Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role

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EVIDENCE GUIDE

and the practical requirements of the workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS

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RANGE STATEMENT

	• memos • regulatory and legislative requirements pertaining to tiling curved surfaces • relevant Australian standards • safe work procedures relating to tiling curved surfaces • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • traffic control
	  • restricted access barriers
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment:	• include:

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RANGE STATEMENT

- brooms
- brushes
- buckets
- caulking guns
- cement sheet cutters
- hammers
- hose and water sprays
- ladders
- levelling equipment
- lump hammers
- measuring tapes and rules
- mortar boards
- nippers
- pointed grouters
- power drills
- power leads
- rags
- rubber mallets
- sanding blocks
- saws
- scrapers
- shovels
- spacers and wedges
- spatulas
- sponges
- squares
- squeegees
- straight edges
- stringlines
- templates
- tile cutters and scribes
- trowels
- wet and dry diamond saws
- wheelbarrows
- wire brushes
- wooden floats

- may include:
  - concrete mixers

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RANGE STATEMENT

	• masonry drill bits • power grinders • power sanders.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials include:	• adhesives • caulking compound • cement mortar (with and without additives) • grout • tiles.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Templates are made from:	• hardboard • plywood • sheet metal.
Wall surfaces include:	• approved waterproof surfaces • blockwork • brickwork • concrete • fibre cement sheet • rendered surfaces • timber.
Types of ***tiles*** include:	• ceramic • glass • granite • marble • porcelain • stone • terracotta.
Tiles are ***fixed*** using:	• adhesives • cement mortar • cement mortar with adhesive additive.

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Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCWF3008A Tile domestic pools and spas

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to tile a domestic pool or spa.

It includes setting out, tiling and finishing straight, curved and tapered pool or spa wall and floor surfaces.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of skills and knowledge to tile domestic pools and spas while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Set out tiling job.	2.1. Levels of pool or spa are identified and established in accordance with specifications. 2.2. Size of tile to be used is determined in accordance with curvature of pool or spa. 2.3. ***Pool or spa surface*** is divided into sectional shapes involving whole tiles and cut tiles. 2.4. Sections are determined by considering sheet sizes of tiles and maintaining straight lines where possible. 2.5. Cross-centre lines are marked out on pool or spa surface. 2.6. Curved surface is set out to form regular shapes running down and through base. 2.7. Tapered sections are set out in highly curved and concave areas, whereby tiles are cut leading to and into the base.
3. Tile straight lines and full sheet sections of surface.	3.1. Paper patterns are marked and cut to shape of section or layout directed to prepare sheets or tiles. 3.2. Spacing is determined and adjusted to ensure minimum cutting in these sections. 3.3. Prepared sheets or tiles are marked to identify with

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ELEMENT	PERFORMANCE CRITERIA
	section of application. 3.4. Specified waterproof adhesive is prepared for application to manufacturer specifications. 3.5. Tiles are laid working from coping down, maintaining parallel to cross-centre lines and regular face alignment.
4. Lay tiles to tapered sections.	4.1. Tapered areas are set out where applicable, to allow for full tile at top. 4.2. Tile sizes and shapes are determined and set out. 4.3. Shaped tiles are cut to designed set out and to specified tolerance. 4.4. Adhesive is applied and tiles are laid maintaining alignment to set out lines and surface of tiles.
5. Lay tiles to curved sections.	5.1. ***Template*** is set out and cut to ensure conformity to tile surface for curve in both dimensions. 5.2. Pad tiles are positioned accurately and fixed to line, to maintain uniform spacing and taper. 5.3. Adhesive is applied and tiles are laid maintaining alignment to template line and surface of tiles. 5.4. ***Tiles are fixed*** to walls, plumb, maintaining levels and curvature of wall in both dimensions to specifications.
6. Tile surface.	6.1. Tile spacings are cleaned and excess adhesive is removed from surface to receive grout. 6.2. Specified grout is mixed and applied according to manufacturer specifications. 6.3. Tiled surface is cleaned and polished with dry cloth to specifications.
7. Clean up.	7.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 7.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- general construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS) and hazards associated with solvents, adhesives and cement or epoxy-based grouts
- materials storage and environmentally friendly waste management
- measurement and calculations

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REQUIRED SKILLS AND KNOWLEDGE

- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations
- pool and spa tiling materials
- processes for the calculation of material requirements
- quality requirements
- techniques in tiling pools and spas
- tiling curved and tapered surfaces
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum, tile a three dimensional corner of a pool or spa with the wall coving into the floor; the floor is to fall (1 in 10) in one direction, with detail including copers and a mosaic water line, ensuring:
  - correct identification of requirement and completion of the tiling
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

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EVIDENCE GUIDE

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- workplace location or simulated workplace
- materials relevant to tiling pools and spas
- hand and power tools, plant and equipment appropriate to tiling pools and spas
- realistic activities covering the mandatory task requirements
- specifications and work instructions.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace

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EVIDENCE GUIDE

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements

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RANGE STATEMENT

	pertaining to tiling pools and spas • relevant Australian standards • safe work procedures relating to tiling pools and spas • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• hazard control
	• hazardous materials and substances
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • concealed services (water, power and gas)
	  • lighting
	  • traffic control
	  • restricted access barriers
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment
	• workplace environmental requirements and safety.

Tools and equipment include:	• brooms • brushes • buckets

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RANGE STATEMENT

	• hose and water sprays • ladders • levelling equipment • lump hammers • measuring tapes and rules • nippers • pointed grouters • rags • rubber mallets • scrapers • spacers/wedges • spatulas • sponges • squares • squeegees • straight edges • stringlines • templates • tile cutters and scribes.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials include:	• tiles • adhesives • cement mortar with adhesive additive • grout.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Pool or spa surfaces may be:	• curved in two dimensions • flat • tapered.
Types of tiles include:	• ceramic • glass • granite • marble • porcelain • stone

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RANGE STATEMENT

Templates may be made from:	• terracotta. • plywood • hardboard • sheet metal.
Tiles are fixed using:	• adhesives • cement mortar with adhesive additive.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCWP2001A Handle waterproofing materials

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to safely handle waterproofing materials manually and mechanically, including their storage requirements.

It includes the preparation, handling, sorting, stacking and disposal of waterproofing products, materials and components in the application of waterproofing systems, including the disposal of waste.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of skills and knowledge to handle waterproofing materials while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Manually handle waterproofing materials.	2.1. ***Materials*** and components are identified and checked for conformity to material schedule, plans and specifications. 2.2. Handling characteristics of ***waterproofing materials*** and components are identified and safe and effective handling techniques are applied. 2.3. Waterproofing materials and components are ***sorted***, stored/stacked and located for support of the job in accordance with supervisor's instructions and manufacturer specifications. 2.4. Waterproofing materials and components are ***protected*** against physical damage and stored clear of trafficways.
3. Prepare for mechanical handling of materials.	3.1. Waterproofing materials and components are prepared and positioned for mechanical handling in accordance with type of material, plant and equipment to be used. 3.2. Materials and components are loaded, unloaded, moved, located and/or installed in accordance with workplace procedures. 3.3. Waterproofing materials and components are safely

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ELEMENT	PERFORMANCE CRITERIA
	handled with assistance of mechanical lifting devices/hoists in accordance with workplace requirements.
4. Handle and remove waste materials.	4.1. Waste waterproofing materials and components are handled in accordance with material safety data sheets (MSDS) and regulatory requirements. 4.2. Hazardous material is identified for separate handling. 4.3. Non-toxic waste materials are removed and disposed of using appropriate procedures. 4.4. ***Dust suppression procedures*** are used to minimise health risk to work personnel and others.
5. Clean up.	5.1. Work area is cleared and ***waste materials*** disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 5.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences

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REQUIRED SKILLS AND KNOWLEDGE

- use and interpret non-verbal communication, such as hand signals
- written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- communication processes - verbal and signalling
- general construction terminology
- job safety analysis (JSA) and safe work method statements
- MSDS and hazards associated with waterproofing materials
- materials storage and environmentally friendly waste management
- measurement and calculation
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- techniques of handling waterproofing materials
- waterproofing materials associated with application systems
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum, given the plans and specifications for the application of a waterproofing system (either internal, external, below ground or remedial):
  - confirm the adequacy and condition of the materials required to prepare for the application
  - safely and effectively manually and mechanically handle them before and during the application
  - dispose or recycle waste and surplus materials for the project.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge

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EVIDENCE GUIDE

will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- workplace location or simulated workplace
- materials relevant to the handling of the specific waterproofing applications
- hand and power tools, plant and equipment appropriate to the handling of waterproofing materials
- realistic tasks covering the mandatory task requirements
- specifications and work instructions.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the

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EVIDENCE GUIDE

workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos

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RANGE STATEMENT

	• regulatory and legislative requirements pertaining to handling waterproofing materials • relevant Australian standards • safe work procedures relating to handling waterproof materials • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces

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RANGE STATEMENT

	• working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.

Tools and equipment required for the handling of waterproofing material is dependent on the waterproofing system being applied and may include:	• angle grinders
	• brooms
	• brushes
	• buckets
	• caulking guns
	• chisels, including cold chisels
	• cutting blades
	• dumpy, laser and water levels
	• electric drills and screwdrivers
	• electric hammers
	• extension leads
	• fusion rollers
	• gas burners and torches
	• hammers
	• hoses
	• measuring tapes and rules
	• mixers and mixing apparatus
	• moisture meters
	• nylon rollers
	• plant, including:
	  • excavating equipment
	  • heat welders
	  • high pressure water equipment
	  • hot air welders
	  • impact drills
	  • pumps
	• pressure injection equipment, including:
	  • cartridge applications
	  • compressors
	  • pumps
	  • vacuum pumps
	• pressure rollers
	• scissors
	• seam probes
	• solvent applicators

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RANGE STATEMENT

	• spirit levels • straight edges • trowels • vacuum cleaners • wood floats.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • stormwater management • vibration • waste management.
Materials include:	• cement-based waterproofing systems • hot mix bituminous felt material membranes • injected materials • liquid sealants or sealant devices • sheet and sprayed material membranes.

Waterproofing materials required to prepare for waterproofing are dependent upon the system of waterproofing being applied and include:	• waterproofing material or membrane for the application which may be:
	  • drainage cells
	  • geotech fabric
	  • liquid applied, including:
	  • acrylic
	  • cementitious-based
	  • injection
	  • polyurethane
	  • primers and adhesives
	  • protection boards
	  • sheet:
	  • bentonite composites
	  • butanol
	  • ethylene cop bitumen (ECB)
	  • ethylene propylene diene monomer rubber (EPDM)
	  • polyvinyl chloride (PVC).

Sorting of materials:	• may be according to: • ease of identification

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RANGE STATEMENT

	• job allocation • material type and size • task sequence • may be applied: • for external and below ground level wet areas • for internal waterproofing • to prepare substrate for waterproofing installation • to remedy waterproofing techniques.
Stored/stacked materials are ***protected*** by:	• barricading • covering • secured (hazardous materials) • signage • tying and banding.
Dust suppression procedures include:	• covering • spraying with water • use of vacuum cleaner.
Waste materials include:	• banding straps • broken or damaged materials and components • cardboard • loose material • packing pieces • paper • plastic.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units

Nil

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Co-requisite units

Functional area

Functional area

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CPCCWP2002A Use waterproofing tools and equipment

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to safely and effectively use tools and equipment used in waterproofing.

It includes identification, selection and use of hand and power tools, plant and equipment used in masonry work.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of skills and knowledge to use waterproofing tools and equipment while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.5. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Identify hand and power tools.	2.1. Types and functions of hand and power tools to be used in the waterproofing work are identified. 2.2. Methods of operation of hand and power tools are identified from specifications, standards and manufacturers' instructions. 2.3. Specific OHS requirements for specific hand and power tools are identified and applied. 2.4. Personal protective equipment (PPE) required for operation of the tools is identified in accordance with regulatory and workplace requirements.
3. Select tools for work.	3.1. ***Tools and equipment*** are selected consistent with job requirements. 3.2. Tools, including leads and hoses, are checked for tags, serviceability and safety and any faults are reported to supervisor. 3.3. Power tools guards, guides and controls are checked and maintained in accordance with manufacturer recommendations. 3.4. Equipment to hold or support material during operation is selected and inspected for faults. 3.5. Pre-operational checks, including lubricants, hydraulic fluid and water, are completed in accordance with manufacturer recommendations.
4. Use tools.	4.1. Power and compressed air supply to work area are connected to the area of work in accordance with regulatory and workplace requirements and codes of practice.

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ELEMENT	PERFORMANCE CRITERIA
	4.2. Start-up and shut-down procedures are observed. 4.3. Tools are used safely and effectively according to manufacturer recommendations and regulatory requirements. 4.4. Tools are safely switched off and located when not in use.
5. Identify and select plant and equipment.	5.1. Function and limitations of waterproofing hand and power tools, plant and equipment used for waterproofing systems and waterproofing tasks are identified. 5.2. Method of operation of plant and equipment is identified from specifications, standards and manufacturers' instructions. 5.3. OHS requirements for specific plant and equipment, including requirements for guarding, guiding and controls, are identified and applied. 5.4. PPE required for the operation of plant and equipment is identified in accordance with regulatory and workplace requirements. 5.5. Items of plant and equipment are selected consistent with hazard minimisation and needs of the job. 5.6. Plant and equipment are checked for safety, and faults are reported to supervisor in accordance with workplace procedures. 5.7. OHS requirements for operating and using plant and equipment are recognised and adhered to.
6. Use plant and equipment.	6.1. Start-up and shut-down procedures are observed. 6.2. Plant and equipment are used safely and effectively according to manufacturer recommendations and regulatory requirements. 6.3. Plant and equipment are safely switched off and located when not in use.
7. Clean up.	7.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 7.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- applications, limitations and method of operation and maintenance of hand and power tools, plant and equipment applicable to waterproofing tasks
- communication processes - verbal and signalling
- general construction terminology
- job safety analysis (JSA) and safe work method statements

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REQUIRED SKILLS AND KNOWLEDGE

- material safety data sheets (MSDS) and hazards associated with the use of waterproofing tools, plant and equipment
- materials storage and environmentally friendly waste management
- measurement and calculation
- plans, drawings and specifications
- quality requirements
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum, follow work instructions and operating procedures to safely and effectively use appropriate tools, plant and equipment for the preparation of the substrate for waterproofing and the application of at least one of the following applications:
  - an internal wet area
  - an external wet area
  - a below ground level wet area
  - a remedial waterproofing project
- ensuring:
  - correct selection and use of appropriate processes, tools and equipment
  - no damage to tools, plant and equipment
  - completing all work to specification
  - compliance with regulations, standards and

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EVIDENCE GUIDE

	organisational quality procedures and processes.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • workplace location or simulated workplace • hand and power tools, plant and equipment appropriate to waterproofing tasks • realistic tasks covering the mandatory task requirements • specifications and work instructions. Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments.

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EVIDENCE GUIDE

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised

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RANGE STATEMENT

	organisational or external personnel • manufacturer specifications and instructions, where specified • MSDS • memos • regulatory and legislative requirements pertaining to the use of waterproofing hand and power tools, plant and equipment • relevant Australian standards • safe work procedures relating to the use of waterproofing hand and power tools, plant and equipment • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers

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RANGE STATEMENT

	• surrounding structures • traffic control • trip hazards • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Environmental requirements include:	• clean-up management • dust and noise • stormwater management • vibration • waste management.
Tools and equipment required for waterproofing tasks are dependent on the waterproofing system being applied and include:	• angle grinders • brooms • brushes • buckets • caulking guns • chisels, including cold chisels • cutting blades • dumpy, laser and water levels • electric drills and screwdrivers • electric hammers • extension leads • fusion rollers • gas burners and torches • hammers • hoses • measuring tapes and rules • mixers and mixing apparatus • moisture meters • nylon rollers • plant, including:

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RANGE STATEMENT

	• high pressure water equipment • excavating equipment • pumps • heat welders • hot air welders • impact drills • pressure injection equipment • pumps • compressors • cartridge applications • vacuum pumps • pressure rollers • scissors • seam probes • solvent applicators • spirit levels • straight edges • trowels • vacuum cleaners • wood floats.
Hand and power tools, plant and equipment include that required:	• for waterproofing internal, external and below ground level wet areas • to apply remedy waterproofing techniques.
Waterproofing systems include:	• cement-based waterproofing systems • hot mix bituminous felt material membranes • injected materials • liquid sealants or sealant devices • sheet and sprayed material membranes.
Waterproofing tasks may be performed on:	• a new construction site • an existing structure being renovated or extended • an existing structure subject to service restoration or maintenance.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCWP2003A Prepare for construction waterproofing process

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to apply waterproofing to differing types of wet areas in varying building situations.

It includes identification of the processes required and planning and preparation of materials for application.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of skills and knowledge to prepare for construction waterproofing work while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Identify design concepts and processes.	2.1. Plans and specifications are examined for work area identification, product description, ***performance requirements*** and ***design requirements***. 2.2. ***Work site is visited*** and work requirements are confirmed. 2.3. ***Waterproof process*** is referenced and identified as conforming to regulations. 2.4. Practices and principles of waterproof design for construction of ***wet areas*** are identified as conforming to codes and standards. 2.5. Appropriateness of the system of waterproofing for the structure or work is determined in relation to ***structural*** elements. 2.6. Potential for and consequences of water penetration and methods of ***water exclusion*** are identified and outlined. 2.7. Method of ***waterproofing installation*** is identified. 2.8. Identified waterproofing materials are confirmed for product suitability and conformity to codes and specification, and are compatible with substrate required finishes, installation technique and building

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ELEMENT	PERFORMANCE CRITERIA
	schedule.
	2.9. Application of bond-breaker/fillet system forming part of the waterproofing installation is identified as fit for purpose.
	2.10. Potential faults, and contingencies and techniques to address them are identified.
3. Select and prepare materials.	3.1. Waterproofing material is checked for conformity to specification and compatibility with substrate material and that the proposed application is in accordance with manufacturer specifications.
	3.2. ***Substrates*** to be waterproofed are prepared to manufacturer specification.
	3.3. Substrates are prime coated with waterproofing material in line with manufacturer specification.
	3.4. Flashings are prepared to job requirements and ready for placement and fixing to job specifications.
	3.5. Reinforcing material is set out and cut to requirements of area waterproofing junctions and surface requirements, in accordance with manufacturer specifications and job requirements.
	3.6. Waterproofing membrane is prepared for installation to wet area surface in accordance with job and manufacturer specifications.
	3.7. Waterproofing material is mixed or prepared for application to surface in accordance with manufacturer specifications and job requirements.
4. Clean up.	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	4.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

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REQUIRED SKILLS AND KNOWLEDGE

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- building structures and work scheduling
- characteristics and applications of waterproofing materials and adhesives
- construction systems and waterproofing considerations and requirements
- general construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS) and the handling of hazardous materials
- materials storage and environmentally friendly waste management
- plans, drawings and specifications

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REQUIRED SKILLS AND KNOWLEDGE

- plant, tools and equipment types, characteristics, uses and limitations
- preparation for waterproofing processes and waterproofing techniques
- principles and considerations of water exclusion
- processes for the calculation of material requirements
- quality requirements
- waterproofing process materials, including durability, compatibility, applications and protection requirements
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum, given the plans and specifications of a waterproofing construction process:
  - read and interpret the plans to assess the specified product's suitability for the work
  - identify the structure and building process, building program and site constraints
  - plan the waterproofing process, identifying the materials and the tools and equipment specifically required for the selected process or membrane
  - confirm plans and specifications on site, including measurements and levels
  - interpret and apply MSDS and manufacturers' instructions and codes
  - prime the substrate and prepare for the application of the membrane, ensuring:

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EVIDENCE GUIDE

- correct identification of requirement and preparation for the installation
- correct selection and use of appropriate processes, tools and equipment
- completing all work to specification.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- workplace location or simulated workplace
- materials relevant to preparing for waterproofing construction processes
- hand and power tools, plant and equipment appropriate to preparing for waterproofing construction processes
- realistic activities covering the mandatory task requirements
- specifications and work instructions.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning

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EVIDENCE GUIDE

knowledge required for practical application

- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating

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RANGE STATEMENT

conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to preparation for the waterproofing construction process
- relevant Australian standards
- safe work procedures relating to preparation for the waterproofing construction process
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Planning and preparation include:

- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- equipment defect identification
- work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
- hazard control
- hazardous materials and substances, including cement and curing agents
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - earth leakage boxes

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RANGE STATEMENT

	• lighting • power cables, including overhead service trays, cables and conduits • restricted access barriers • surrounding structures • traffic control • trip hazards • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment required to prepare for waterproofing:	• include: • measuring tapes and rules • mixer and mixing apparatus • moisture meters • spirit levels • straight edges • may include: • brushes • cutting blades • dumpy, laser and water levels • evacuating equipment and pumps • fans • floodlights • rollers • scissors • vacuum cleaners.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials required to prepare for waterproofing include:	• adhesives • primers • sheet:

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RANGE STATEMENT

	• bentonite composites • butanol • ethylene cop bitumen (ECB) • ethylene propylene diene monomer rubber (EPDM) • polyvinyl chloride (PVC) • waterproofing material or membrane for the application may be liquid applied: • acrylic • cementitious-based • injection • polyurethane.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Performance requirements include:	• cost • detail relating to materials • provision of site access and facilities • quality assurance • quality and standards of work • standard procedures and practices • work schedules.
Design requirements include:	• making an assessment of suitability for the construction process • selection and preparation of identified materials.
Work site visit permits liaison with others and the confirmation of details such as:	• levels • measurements • moisture content • risk assessment • schedules • structure • substrates • termination requirements.
Waterproofing process may be applied:	• below ground • externally • internally.
Wet areas include:	• bathrooms

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RANGE STATEMENT

	• decks • en suites • food preparation areas • foundation works • kitchens • laundries • lift pits • patios • planter boxes • retaining walls • roofs • showers • slabs • stair wells.

Structural considerations include:	• design principles
	• drainage requirements
	• environmental factors:
	  • allowing water flow
	  • slope, fall and grade of surfaces
	  • water run-off and impact on adjoining property
	• hydrostatic pressures
	• substrate type and condition
	• waterproofing protection.

Considerations in ***water exclusion*** include:	• capillary action
	• causes of water penetration:
	  • leakage through wall and floor finishes
	  • penetration at joints and junctions
	  • movement from shrinkage
	  • accumulated drainage
	  • failure of or damage to waterproofing system corners and terminations
	• curing times of compounds and their applications
	• damp proof courses and flashings
	• direction of fall of substrate or decorative finish
	• hydrostatic pressure
	• impact of environmental conditions
	• joining

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RANGE STATEMENT

	• shelf life of waterproofing products
	• surface applications and protection requirements
	• use of bond-breakers
	• use of sealants
	• waste allowances
	• perimeter treatment, including:
	  • pressure seals
	  • over flashing
	• thermal shrinkage (expansion and contraction).

Waterproofing installation may be applied as:	• a liquid • a sheet • injected material.

Substrates include:	• aerated autoclaved concrete materials:
	  • Hebel
	  • Thermolite
	• blockwork
	• brickwork
	• cement render
	• ferrous and non-ferrous piping
	• fibrous cement sheeting
	• pre-cast concrete
	• PVC
	• reinforced in situ concrete
	• timber and timber-based products
	• wet area plasterboard.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Co-requisite units Nil

Functional area

Functional area

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CPCCWP2004A Prepare surfaces for waterproofing application

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to repair and prepare different material surfaces that form part of the application of waterproofing within the construction process.

It includes the inspection, preparation for, and repair and finishing of surfaces prior to the application of the waterproofing process.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of skills and knowledge to prepare surfaces for waterproofing application while working with others as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Prepare work area.	2.1. Area to be waterproofed is identified from plans and specifications. 2.2. ***Surface*** to be waterproofed is ***inspected and tested*** to determine appropriateness of the installation and any contaminants, moisture or incompatible materials. 2.3. Ventilation is provided in accordance with material safety data sheets (MSDS). 2.4. Run-off and environmental controls are provided in accordance with regulatory and workplace requirements. 2.5. Work area is prepared for the ***waterproofing*** processes in accordance with manufacturer specifications. 2.6. Surface mounted ***wet area*** construction units, fixtures and attachments are detached, removed or arranged for removal from the work area and stored. 2.7. Building structure service penetrations, cavities or knockout sections are cleaned of unwanted materials or debris in accordance with good building practice. 2.8. Cross cavity flashings and overlapping are inspected for damage and fitness for purpose.

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ELEMENT	PERFORMANCE CRITERIA
	2.9. Work surface of the building structure is cleaned free of unwanted materials in accordance with good building practice.
3. Prepare and repair substrate.	3.1. Surface or area to be prepared and repaired is assessed for defects to ascertain responsibility for repair, referring areas of concern to supervisor or structural engineer.
	3.2. Tools are selected to prepare and repair the surface consistent with surface condition and work to be undertaken.
	3.3. Appropriate tools are used and applied safely to remove loose or protruding material to specification.
	3.4. Surface is prepared for repair in accordance with manufacturer specifications and workplace procedures.
	3.5. Method of repairing surface defects is determined in accordance with manufacturer specifications and is consistent with type of material surface, size of defect, compatibility of materials and specified finish.
	3.6. Repair medium materials are selected, prepared and applied in accordance with manufacturers' and supervisor or structural engineer specifications and consistent with type of material, surface, size of defect, compatibility of materials and specified finish.
	3.7. Appropriate water stops/hobs and bond breakers/fillets are installed in accordance with manufacturer specifications, drawings and finish levels.
	3.8. ***Substrate*** to be waterproofed is prepared to manufacturer specification.
	3.9. Substrate is prime coated with waterproofing material in line with manufacturer specification.
	3.10. Primed surface area is cleaned free of unwanted materials to provide a smooth and uniform surface in accordance with specifications, manufacturer recommendations and good building practices.
	3.11. Surface is protected until the application of the waterproof membrane in accordance with workplace procedures.
4. Clean up.	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations and codes of practice and job

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ELEMENT	PERFORMANCE CRITERIA
	specification.
	4.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:

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REQUIRED SKILLS AND KNOWLEDGE

- use a range of mobile technology, such as two-way radio and mobile phones
- voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- building structures and work scheduling
- characteristics, compatibility and applications of waterproofing materials and adhesives
- construction systems and waterproofing considerations and requirements
- contaminants in waterproofing processes
- flashing and termination detailing
- general construction terminology
- job safety analysis (JSA) and safe work method statements
- levels and falls
- material safety data sheets (MSDS) and the handling of hazardous materials
- materials handling, storage and environmentally friendly waste management
- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations
- preparation surfaces for waterproofing application techniques
- principles and considerations of water exclusion
- processes for the calculation of material requirements
- quality requirements
- waterproofing process materials, including durability, compatibility, applications and protection requirements
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum, prepare for the waterproofing of a bathroom on a suspended concrete slab, with fibrous cement sheeted walls at the corner junction of a masonry wall, ensuring:
  - correct identification of requirement and preparation for the work
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

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EVIDENCE GUIDE

Resource implications for assessment include:

- workplace location or simulated workplace
- materials relevant to preparing surfaces for the waterproofing application
- hand and power tools, plant and equipment appropriate to preparing surfaces for the waterproofing application
- realistic activities covering the mandatory task requirements
- specifications and work instructions.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances

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EVIDENCE GUIDE

assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to preparation of surfaces for the waterproofing application
- relevant Australian standards

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RANGE STATEMENT

	• safe work procedures relating to preparation of surfaces for the waterproofing application • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment
	• use of tools and equipment

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RANGE STATEMENT

	• workplace environmental requirements and safety.
Tools and equipment include:	• angle grinders • brooms • brushes • buckets • caulking guns • chisels, including cold chisels • cutting blades • dumpy levels, laser and water levels • electric drills and screwdrivers • electric hammers • evacuating equipment • extension leads • floodlights and fans • hammers • high pressure water equipment • measuring tapes and rules • mixers and mixing apparatus • moisture meters • pump • rollers • scissors • spirit levels • straight edges • trowels • vacuum cleaners • wood floats.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Materials include:	• acid etching compounds • brick, block and stone • caulking compounds • cleaning and degreasing agents • concrete • fibreglass • masonry • metal (ferrous and non-ferrous)

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RANGE STATEMENT

	• non-metallic • plaster • primers • proprietary fillers and binders • sand and cement • sheet material • timber.
Environmental requirements include:	• clean-up management • dust and noise • sand clean-up management • vibration • waste management.
Surface defects include:	• contaminants • cracked or damaged brick or block work • cracks and splits • holes • inadequate substrate fall • inappropriate fixings • incompatible materials • loose fittings, pipework and work stops • missing, cracked or damaged substrate • moisture • out of plumb and level surfaces • rough imperfect surfaces • sandy, loose and flaked surface materials • sheet flutter and soundness • substrate drumming • surface depressions or dents.
Inspection and testing are to determine:	• preparatory requirements • performance of the repair • filling • priming work prior to installation of the waterproofing system.
Waterproofing processes may be applied to:	• below ground • external • internal.
Waterproofing may be applied as:	• a liquid • a sheet • injected material.

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RANGE STATEMENT

Wet areas include:	• bathrooms • en suites • food preparation areas • foundation works • kitchens • laundries • lift pits • patios and decks • planter boxes • retaining walls • roofs • showers • slabs • stair wells.

Substrates include:	• aerated autoclaved concrete materials:
	  • Hebel
	  • Thermolite
	• blockwork
	• brickwork
	• cement render
	• ferrous and non-ferrous piping
	• fibrous cement sheeting
	• pre-cast concrete
	• polyvinyl chloride (PVC)
	• reinforced in situ concrete
	• timber and timber-based products
	• wet area plasterboard.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Co-requisite units Nil

Functional area

Functional area

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CPCCWP3001A Apply waterproofing process to below ground level wet areas

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to apply waterproofing practices and principles to wet areas below ground level.

It includes identification of the waterproofing system to be used, its preparation and its application.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of skills and knowledge to apply waterproofing process to below ground level wet areas while working with others and in teams.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Identify waterproofing system.	2.1. ***Below ground*** area to be waterproofed is identified from job drawings and specifications or diagnosed for damp fault area. 2.2. Area is ***inspected*** for ***structural*** and surface defects in accordance with job and manufacturer specifications. 2.3. Appropriate ***waterproofing systems*** and products are identified, analysed and selected for ***water exclusion*** in accordance with job and manufacturer specifications and with material safety data sheet (MSDS) directions. 2.4. Range of waterproofing materials is checked for product suitability, conformity to specification and compatibility with surface material, preparation and waterproofing installation technique. 2.5. Type of waterproofing material is identified in accordance with job specification, state of structure and job safety requirements of MSDS directions.
3. Prepare for waterproofing installation.	3.1. Below ground wet area site set out, building alignment and finished levels are checked to conform with specified location, structure and dimensions in

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ELEMENT	PERFORMANCE CRITERIA
	accordance with drawings and specifications. 3.2. Moisture content in substrate is identified. 3.3. Appropriateness of the system of waterproofing selected for the structure or work is confirmed. 3.4. Below ground wet area site levels are checked for conformity to drawings and specifications. 3.5. Requirement for shoring of the work site is identified and arranged. 3.6. Access to installation area is assessed for adequacy and safety to allow for the installation over the full surface of the work area. 3.7. Provision for drainage is identified and confirmed with supervisor or hydraulic consultant as being appropriate for the installation. 3.8. Existing flashings, new flashings and termination seals are prepared to job requirements and made ready for placement and fixing to job and manufacturer specifications. 3.9. Waterproofing material, quantity and product type are confirmed as conforming to job specification, state of structure and job safety requirements, and MSDS direction. 3.10. ***Substrate*** is prepared to a smooth and uniform finish with fillets and falls fitted in accordance with manufacturers' instructions and good building practices. 3.11. Surface of structure to be waterproofed is prepared and primed ready for waterproofing application in accordance with job specification and manufacturers' specifications and recommendations.
4. Apply waterproofing.	4.1. Waterproofing system is applied to primed surface of structure to correct thickness and in accordance with manufacturers' job specification. 4.2. Bond breaker/fillets are installed in accordance with manufacturer specifications. 4.3. Waterproofing material/system is installed using methods and materials consistent with manufacturers' specifications. 4.4. Termination seals are installed using methods and materials consistent with manufacturers' specifications. 4.5. Completed below ground waterproofing installation is checked for conformity to manufacturer

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ELEMENT	PERFORMANCE CRITERIA
	specifications.
	4.6. Waterproofing material/system is protected and drained using methods and materials consistent with manufacturers' specifications and good building practice.
	4.7. Final inspection of site is undertaken and sign-off and handover of work is carried out in accordance with workplace requirements.
5. Clean up.	5.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	5.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements

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REQUIRED SKILLS AND KNOWLEDGE

- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- below ground level waterproofing materials, processes and techniques
- characteristics and applications of waterproofing materials and adhesives
- construction systems and waterproofing considerations
- general construction terminology
- job safety analysis (JSA) and safe work method statements
- MSDS
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations
- principles and considerations of water exclusion
- processes for the calculation of material requirements
- quality requirements
- shoring techniques and requirements
- termination and overflashing detailing
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum waterproof a basement wall excavated in a clay work site, with:
  - the wall of masonry block and with a concrete column at mid span
  - the wall and column supported on a strip concrete footing
  - a cavity wall above the block wall
  - the site is to be backfilled and access to the bottom edge of the footing currently not available
  - the appropriate root resistant waterproofing material selected
  - drainage and protection of the waterproofing provided
  - ensuring:
    - correct identification of requirement and installation of the waterproofing system

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EVIDENCE GUIDE

- correct selection and use of appropriate processes, tools and equipment
- completing all work to specification
- proposed termination detailing.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- workplace location or simulated workplace
- materials relevant to waterproofing below ground level wet areas
- hand and power tools, plant and equipment appropriate to waterproofing below ground level wet areas
- realistic activities covering the mandatory task requirements
- specifications and work instructions.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills

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EVIDENCE GUIDE

with workplace tasks and job roles

- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches

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RANGE STATEMENT

	• instructions issued by authorised organisational or external personnel • manufacturer specifications and instructions, where specified • MSDS • memos • regulatory and legislative requirements pertaining waterproofing below ground level wet areas • relevant Australian standards • safe work procedures relating to waterproofing below ground level wet areas • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers

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RANGE STATEMENT

	• surrounding structures • traffic control • trip hazards • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• angle grinders • brooms • brushes • buckets • caulking guns • chisels, including cold chisels • cutting blades • dumpy, laser and water levels • electric drills and screwdrivers • electric hammers • excavating equipment • extension leads • gas burners and torches • hammers • high pressure water equipment • measuring tapes and rules • mixers and mixing apparatus • moisture meters • pumps • rollers • scissors • shoring equipment • spirit levels • straight edges • trowels • vacuum cleaners • wood floats.
Quality requirements include	• Australian standards • internal company quality policy and standards

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RANGE STATEMENT

relevant regulations, including:	• manufacturer specifications • workplace operations and procedures.

Waterproofing ***materials*** include:	• adhesives
	• drainage cells
	• drainage piping
	• for below ground application, which may be:
	  • liquid applied, including:
	  • acrylic
	  • bituminous
	  • cementitious-based
	  • injection
	  • polyurethane
	  • sheet, including:
	  • bentonite composites
	  • butanol
	  • ethylene cop bitumen (ECB)
	  • ethylene propylene diene monomer rubber (EPDM)
	  • polyvinyl chloride (PVC)
	• waterproofing materials, including:
	  • geotech fabric
	  • protection board
	  • substrate primer.

Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Below ground applications include:	• external and internal vertical walls constructed below ground level and under slab waterproofing barriers • foundation work • lift pits • pools and ponds • retaining walls • retention tanks • stair wells • tanks • water storage areas • underground residential and commercial

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RANGE STATEMENT

	spaces, such as: • basements • car parks • storage areas.

Inspection and identification of the waterproofing system include:	• preparation of the substrate and waterproofing material
	• application to a below ground level wet area
	• the process:
	  • testing
	  • drainage
	  • protection of the membrane system and flashings.

Structural considerations include:	• below ground environmental factors, including:
	  • water run-off and impact on adjoining property
	  • allowing water flow
	  • slope, fall and grade of surfaces
	• design principles
	• drainage requirements
	• hydrostatic pressures
	• structural movement
	• substrate type and condition
	• waterproofing protection.

Waterproofing systems include:	• below ground waterproofing material should be:
	  • cement-based waterproofing systems
	  • liquid sealants or sealant devices
	  • not subject to biological attack
	  • root resistant
	• sheet and sprayed material membranes.

Considerations in ***water exclusion*** include:	• capillary action
	• causes of water penetration, including:
	  • leakage through wall and floor finishes
	  • penetration at joints and junctions
	  • movement from shrinkage
	  • accumulated drainage
	• failure of or damage to waterproofing system
	• corners and terminations
	• curing times of compounds and their

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RANGE STATEMENT

	applications
	• damp proof courses and flashings
	• direction of fall of substrate or decorative finish
	• hydrostatic pressure
	• impact of environmental conditions
	• joining
	• perimeter treatment, including:
	  • pressure seals cross cavity and over flashing
	  • thermal shrinkage (expansion and contraction)
	• shelf life of waterproofing products
	• surface applications and protection requirements
	• use of bond-breakers
	• use of sealants
	• waste allowances.

Substrates include:	• aerated autoclaved concrete materials:
	  • Hebel
	  • Thermolite
	• blockwork
	• brickwork
	• cement render
	• ferrous and non-ferrous piping
	• fibrous cement sheeting
	• pre-cast concrete
	• PVC
	• reinforced in situ concrete
	• timber and timber-based products
	• wet area plasterboard.

Unit Sector(s)

Unit sector Construction

Co-requisite units

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Co-requisite units Nil

Functional area

Functional area

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CPCCWP3002A Apply waterproofing process to internal wet areas

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to apply waterproofing practices and principles to internal wet areas.

It includes identification of the waterproofing system to be used, its preparation and its application.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of skills and knowledge to apply waterproofing process to internal wet areas while working with others and in teams.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Identify waterproofing system.	2.1. Internal area to be waterproofed is ***identified*** from job drawings and specifications. 2.2. Area of structure to be waterproofed is inspected for defects and soundness in accordance with job and manufacturer specifications. 2.3. Appropriate ***waterproofing systems*** and products are identified, analysed and selected for ***water exclusion*** in accordance with job and manufacturer specifications, and with material safety data sheet (MSDS) directions. 2.4. Range of waterproofing materials is checked for product suitability; conformity to specification; and compatibility with surface material, preparation and waterproofing installation technique. 2.5. Termination detailing is determined. 2.6. Type of waterproofing material is identified in accordance with job specification, state of ***structure***, and job safety requirements with MSDS directions.
3. Prepare for waterproofing installation.	3.1. ***Internal wet area*** and wet area fitment or ***fixtures*** are checked for specific measurements and set out in accordance with drawings and specifications.

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ELEMENT	PERFORMANCE CRITERIA
	3.2. Substrate is checked for soundness of fit, curing compounds, moisture content and other contaminants, and reported or remedied as required.
	3.3. Flooring installation levels and falls to waste outlets are checked for conformity to specification.
	3.4. Corner flashing is installed in accordance with manufacturer recommendations.
	3.5. Points of connection, termination detailing and over flashings as required are checked to be in place and secure.
	3.6. Rebates for baths and basins are checked for compliance with standards.
4. Prepare substrate.	4.1. Defects are corrected and made good in accordance with manufacturer specifications, to bring ***substrate*** to a smooth and uniform finish.
	4.2. Surface of structure to be waterproofed is prepared to manufacturers' specification, including fixings and belling out around taps.
	4.3. Water stops and hobs are installed in required location in compliance with standards and good building practice.
	4.4. Prepared surface of structure is prime coated to manufacturers' specification, where applicable.
5. Apply waterproofing.	5.1. Waterproofing membrane is applied to primed surface of structure to correct thickness and in accordance with manufacturers' job specification.
	5.2. Appropriate bond breakers and fillets are applied as required in accordance with manufacturer specifications.
	5.3. Waterproofing membrane is cured in accordance with manufacturers' specification and workplace requirements.
	5.4. Flood testing of installation is conducted if required.
	5.5. Waterproofing system and materials are protected using methods and materials consistent with manufacturers' specification, workplace requirements and good building practice.
	5.6. Final inspection of site is undertaken in accordance with certifying authority's requirements and sign-off and handover of work is carried out in accordance with workplace requirements.
6. Clean up.	6.1. Work area is cleared and materials disposed of,

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ELEMENT	PERFORMANCE CRITERIA
	reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	6.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:

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REQUIRED SKILLS AND KNOWLEDGE

- use a range of mobile technology, such as two-way radio and mobile phones
- voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- assessment and appreciation of moisture content in substrate materials
- characteristics and applications of waterproofing materials and adhesives
- construction systems and waterproofing considerations
- general construction terminology
- internal waterproofing materials, processes and techniques
- job safety analysis (JSA) and safe work method statements
- materials storage and environmentally friendly waste management
- MSDS
- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations
- principles and considerations of water exclusion
- processes for the calculation of material requirements
- quality requirements
- termination and flashing principals
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum:
  - waterproof a bathroom incorporating:
    - lap up a wall
    - appropriate penetrations
    - wastes and hobs
  - install and detail a hobless frame shower enclosure and a bath that abuts a masonry connection wall, ensuring:
    - correct identification of requirement and installation of the waterproofing
    - correct selection and use of appropriate processes, tools and equipment
    - completing all work to specification
    - correct termination and overflashing.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements

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EVIDENCE GUIDE

and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- workplace location or simulated workplace
- materials relevant to waterproofing internal wet areas
- hand and power tools, plant and equipment appropriate to waterproofing internal wet areas
- realistic activities covering the mandatory task requirements
- specifications and work instructions.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role

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EVIDENCE GUIDE

and the practical requirements of the workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to waterproofing internal wet areas

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RANGE STATEMENT

	• relevant Australian standards • safe work procedures relating to waterproofing internal wet areas • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment

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RANGE STATEMENT

	• use of tools and equipment • workplace environmental requirements and safety.
Tools and equipment include:	• angle grinders • brooms • brushes • buckets • caulking guns • chisels, including cold chisels • cutting blades • electric drills and screwdrivers • fans • floor scrapers • hammers • heat welders • hot air welders • lights • measuring tapes and rules • moisture meters • nylon rollers • pressure rollers • fusion rollers • scissors • seam probes • solvent applicators • spirit levels • straight edges • vacuum cleaners.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.

Materials for internal application include:	• adhesives
	• drainage cell
	• liquid applied, including:
	  • acrylic
	  • cementitious-based
	  • injection
	  • polyurethane
	• protection board

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RANGE STATEMENT

	• sheet, including:
	  • bentonite composites
	  • butanol
	  • ethylene cop bitumen (ECB)
	  • ethylene propylene diene monomer rubber (EPDM)
	  • polyvinyl chloride (PVC)
	• substrate primer.

Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.

Identification of the waterproofing system includes:	• preparation of the substrate and waterproofing material
	• application to an internal wet area.
	• process:
	  • testing
	  • drainage
	  • protection of the membrane system.

Waterproofing systems include:	• cement-based waterproofing systems. • hot mix bituminous felt material membranes • liquid sealants • sealant devices • sheet and sprayed material membranes.

Considerations in ***water exclusion*** include:	• capillary action
	• causes of water penetration, including:
	  • leakage through wall and floor finishes
	  • penetration at joints and junctions
	  • movement from shrinkage
	  • accumulated drainage
	  • failure of or damage to waterproofing system corners and terminations
	• curing times of compounds and their applications
	• damp proof courses and flashings
	• direction of fall of substrate or decorative finish
	• hydrostatic pressure
	• impact of environmental conditions

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RANGE STATEMENT

	• joining
	• perimeter treatment, including:
	  • pressure seals and over flashing
	  • thermal shrinkage (expansion and contraction)
	• shelf life of waterproofing products
	• surface applications and protection requirements
	• use of bond breakers
	• use of sealants
	• waste allowances.

Structural considerations include:	• design principles
	• drainage requirements
	• environmental factors, including:
	  • water run-off and impact on adjoining property
	  • allowing water flow
	  • slope, fall and grade of surfaces
	• hydrostatic pressures
	• movement
	• substrate type and condition
	• waterproofing protection.

Internal wet area applications include:	• bathrooms • en suites • laundries • showers • other wet process areas.
Wet area ***fixtures*** include:	• bidets • pre-cast baths • shower bases • sink units • trough units • urinals • vanity units • water closets.

Substrates include:	• aerated autoclaved concrete materials:
	  • Hebel
	  • Thermolite
	• blockwork
	• brickwork

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RANGE STATEMENT

- cement render
- ferrous and non-ferrous piping
- fibrous cement sheeting
- pre-cast concrete
- PVC
- reinforced in situ concrete
- timber and timber-based products
- wet area plasterboard.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCWP3003A Apply waterproofing process to external wet areas

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to apply waterproofing practices and principles to external wet areas.

It includes identification of the waterproofing system to be used, its preparation and its application.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of skills and knowledge to apply waterproofing process to external wet areas while working with others and in teams.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Identify waterproofing system.	2.1. Area to be waterproofed is ***identified*** from job drawings and specifications or diagnosed for damp fault area. 2.2. Area is inspected for structural and surface defects in accordance with job and manufacturer specifications. 2.3. Appropriate ***waterproofing systems*** and products are identified, analysed and selected for ***water exclusion*** in accordance with job and manufacturer specifications and with material safety data sheet (MSDS) directions. 2.4. Range of waterproofing materials is checked for product suitability, conformity to specifications and compatibility with surface material, preparation and waterproofing installation technique. 2.5. Type of waterproofing material is identified in accordance with job specification, state of structure and job safety requirements with MSDS directions.
3. Prepare for waterproofing installation.	3.1. Wet area site set-out, building alignment and finished levels are checked to conform with specified location, structure and dimensions in accordance

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ELEMENT	PERFORMANCE CRITERIA
	with drawings and specifications. 3.2. Moisture content in substrate is identified. 3.3. Appropriateness of the system of waterproofing selected for the structure or work is confirmed. 3.4. ***Wet area*** site levels are checked for conformity to drawings and specifications. 3.5. Access to installation area is assessed for adequacy and safety to allow for installation over the full surface of the work area. 3.6. Provision for drainage is identified and confirmed with supervisor or hydraulic consultant as being appropriate for the installation. 3.7. Existing flashings, new flashings and termination seals are prepared to job requirements and made ready for placement and fixing to job and manufacturer specifications. 3.8. Waterproofing material, quantity and product type are confirmed as conforming to job specification, state of structure and job safety requirements, and MSDS directions. 3.9. ***Substrate*** is prepared to a smooth and uniform finish with fillets and falls fitted in accordance with manufacturers' instructions and good building practices. 3.10. Surface of ***structure*** to be waterproofed is prepared and primed ready for waterproofing application in accordance with job specification and to manufacturers' specification and recommendations.
4. Apply waterproofing.	4.1. Waterproofing system is applied to primed surface of structure to correct thickness and in accordance with manufacturers' job specification. 4.2. Bond breaker/fillets are installed in accordance with manufacturer specifications. 4.3. Waterproofing material and system are installed using methods and materials consistent with manufacturer specifications. 4.4. Termination seals are installed using methods and materials consistent with manufacturer specifications. 4.5. Completed waterproofing installation is checked for conformity to manufacturer specifications. 4.6. Waterproofing system is water tested to confirm its

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ELEMENT	PERFORMANCE CRITERIA
	fitness for purpose.
	4.7. Waterproofing materials and system are protected and drained using methods and materials consistent with manufacturers' specification and good building practice.
	4.8. Final inspection of site is undertaken and sign-off and handover of work are carried out in accordance with workplace requirements.
5. Clean up.	5.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.
	5.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements

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REQUIRED SKILLS AND KNOWLEDGE

- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- below ground level waterproofing materials, processes and techniques
- characteristics and applications of waterproofing materials and adhesives
- construction systems and waterproofing considerations
- general construction terminology
- job safety analysis (JSA) and safe work method statements
- MSDS
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations
- principles and considerations of water exclusion
- processes for the calculation of material requirements
- quality requirements
- termination, cross cavity and overflashing requirements
- testing procedures for waterproof membrane systems
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum:
  - waterproof a concrete slab balcony in a cavity brick building with an integrated rendered brick planter box
  - waterproof a fibrous cement balcony in a cavity brick building where the structural floor levels have a step down of no less than 100mm from internal to external; the balcony is to cross fall to a gutter or drainage and detailing is to be provided through threshold cross-section, indicating how waterproofing would terminate at handrail posts (which are through bolted to the floor frame under the deck)
  - both tasks are to be undertaken ensuring:
    - correct identification of requirement and installation of the waterproofing
    - correct selection and use of appropriate

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EVIDENCE GUIDE

processes, tools and equipment
- completing all work to specification
- correct termination and flashing detailing
- appropriate membrane testing and application of protection techniques.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- workplace location or simulated workplace
- materials relevant to waterproofing external wet areas
- hand and power tools, plant and equipment appropriate to waterproofing external wet areas
- realistic activities covering the mandatory task requirements
- specifications and work instructions.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application

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EVIDENCE GUIDE

- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

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RANGE STATEMENT

Information includes:	• diagrams or sketches • instructions issued by authorised organisational or external personnel • manufacturer specifications and instructions, where specified • MSDS • memos • regulatory and legislative requirements pertaining to waterproofing external wet areas • relevant Australian standards • safe work procedures relating to waterproofing external wet areas • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers

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RANGE STATEMENT

- surrounding structures
- traffic control
- trip hazards
- work site visitors and the public
- working at heights
- working in confined spaces
- working in proximity to others
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Tools and equipment:

- include:
  - angle grinders
  - brooms
  - brushes
  - buckets
  - caulking gun
  - chisels, including cold chisels
  - cutting blades
  - electric drills and screwdrivers
  - electric hammers
  - extension leads
  - gas burners and torches
  - hammers
  - laser and water levels
  - measuring tapes and rules
  - mixer and mixing apparatus
  - moisture meter
  - rollers
  - scissors
  - spirit level
  - straight edge
  - torches
  - trowels
  - vacuum cleaner
  - wood float
- may include:
  - automatic levels

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RANGE STATEMENT

	• excavating equipment • high pressure water equipment • pumps.
Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.

Materials for below ground application may be:	• liquid applied, including:
	  • acrylic
	  • cementitious-based
	  • injection
	  • polyurethane
	• sheet, including:
	  • bentonite composites
	  • butanol
	  • ethylene cop bitumen (ECB)
	  • ethylene propylene diene monomer rubber (EPDM)
	  • polyvinyl chloride (PVC)
	• waterproofing materials, including:
	  • adhesives
	  • drainage cell
	  • geotech fabric
	  • protection board
	  • substrate primer.

Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Identification includes:	• preparation of the substrate and the waterproofing material • application to an external wet area • process, including testing, drainage and protection of the membrane system and flashings.
Waterproofing systems include:	• cement-based waterproofing systems. • hot mix bituminous felt material membranes • liquid sealants or sealant devices • sheet and sprayed material membranes.

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RANGE STATEMENT

Considerations in ***water exclusion*** include:	• capillary action
	• causes of water penetration, including:
	  • leakage through wall and floor finishes
	  • penetration at joints and junctions
	  • movement from shrinkage
	  • accumulated drainage
	  • failure of or damage to waterproofing system
	• damp proof courses and flashings
	• corners and terminations
	• curing times of compounds and their applications
	• direction of fall of substrate or decorative finish
	• hydrostatic pressure
	• impact of environmental conditions
	• joining
	• perimeter treatment, including:
	  • pressure seals
	  • cross cavity
	  • over flashing
	  • thermal shrinkage (expansion and contraction)
	• shelf life of waterproofing products
	• surface applications and protection requirements
	• use of bond-breakers
	• use of sealants
	• waste allowances.

External ***wet area*** applications include:	• awnings • balconies • external vertical walls • planter boxes • roofs.

Substrates include:	• aerated autoclaved concrete materials:
	  • Hebel
	  • Thermolite
	• blockwork
	• brickwork
	• cement render

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RANGE STATEMENT

	• ferrous and non-ferrous piping • fibrous cement sheeting • pre-cast concrete • PVC • reinforced in situ concrete • timber and timber-based products • wet area plasterboard.

Structural considerations include:	• design principles
	• drainage requirements
	• hydrostatic pressures
	• structural movement
	• substrate type and condition
	• environmental factors, including:
	  • allowing water flow
	  • slope, fall and grade of surfaces
	  • water run-off and impact on adjoining property
	  • waterproofing protection.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCCWP3004A Apply waterproofing remedial processes

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to apply remedial waterproofing processes to external and below ground level wet areas, using injection epoxy, cement crystallisation or hydrostatic coating methods.

It includes identification of the waterproofing system to be used, its preparation and its application.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of skills and knowledge to apply waterproofing remedial processes while working with others and in teams.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1. Work instructions and operational details are obtained using relevant ***information***, confirmed and applied for ***planning and preparation*** purposes. 1.2. ***Safety*** (***OHS***) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. ***Tools and equipment*** selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans and specifications and ***quality requirements***. 1.6. ***Materials*** appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. ***Environmental requirements*** are identified for the project in accordance with environmental plans and regulatory obligations and applied.
2. Identify waterproofing system.	2.1. Area to be waterproofed is ***identified*** from a technical report or diagnosed damp fault area and inspected for ***defects*** and soundness in accordance with job and manufacturer specifications. 2.2. Area of structure for ***waterproofing surface application*** is inspected for defects and soundness in accordance with job and manufacturer specifications. 2.3. Appropriate ***remedial waterproofing systems*** and products are identified, analysed and selected in accordance with job and manufacturer specifications and with material safety data sheet (MSDS) directions. 2.4. Range of waterproofing materials is checked for product suitability, conformity to specification and compatibility with surface material, preparation and waterproofing installation technique. 2.5. Type of waterproofing material is identified in accordance with type of ***substrate***, job specification, state of structure and job safety requirements with MSDS directions.
3. Prepare for	3.1. Site to be repaired is confirmed to be in accordance

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ELEMENT	PERFORMANCE CRITERIA
waterproofing process.	with drawings, specifications and manufacturers' specification. 3.2. Construction/installation site is set out to specified location, structure and dimensions in accordance with drawings and specifications.
4. Apply waterproofing using injection.	4.1. Injection hole set-out spacings and depth are determined and measured in accordance with manufacturer recommendations. 4.2. Materials are prepared for injection method application in accordance with manufacturer recommendations. 4.3. Injection equipment is prepared and set up for injection process in accordance with manufacturer recommendations. 4.4. Injection system is tested and flushed in accordance with manufacturer specifications. 4.5. Damp course is made water resistant and capped using injection method in accordance with manufacturer recommendations and to specifications.
5. Apply waterproofing using hydrostatic barrier coatings.	5.1. Area to be repaired is located from job instructions, drawings and specifications. 5.2. Materials are prepared for remedial coating method application in accordance with manufacturer recommendations. 5.3. Application equipment is prepared and set up for application process in accordance with manufacturer recommendations. 5.4. Injection system is tested and flushed in accordance with manufacturer specifications. 5.5. System is connected to tubing caps and damp course is made water resistant and capped using injection method in accordance with manufacturer recommendations and to specifications.
6. Clean up	6.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 6.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - recognise procedures
  - report faults
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - written skills to record results of checks and tests and relevant work completion procedures
- evaluate own actions and make judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks and management systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- characteristics and applications of remedial waterproofing materials
- construction systems and waterproofing considerations
- general construction terminology
- job safety analysis (JSA) and safe work method statements
- materials storage and environmentally friendly waste management

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REQUIRED SKILLS AND KNOWLEDGE

- MSDS
- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations
- principles and considerations of water exclusion
- processes for the calculation of material requirements
- quality requirements
- remedial waterproofing materials, processes and testing techniques
- workplace and equipment safety requirements.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- as a minimum:
  - repair a crack in a concrete basement wall or a suspended car park slab, identifying remedial waterproofing method to be used, determining the type of material to be used and the repair requirement (e.g. spacing of injection ports/packers if using an injection method), and testing the application
  - inject a chemical damp course into a solid 230 brick wall/party wall and a cavity brick wall, plugging each procedure with epoxy plug, ensuring:
    - correct identification of requirement and installation of the waterproofing
    - correct selection and use of appropriate processes, tools and equipment
    - completing all work to specification.

Context of and specific resources

This competency is to be assessed using standard and

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EVIDENCE GUIDE

for assessment

authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- workplace location or simulated workplace
- materials relevant to remedial waterproofing processes
- hand and power tools, plant and equipment appropriate to remedial waterproofing processes
- realistic activities covering the mandatory task requirements
- specifications and work instructions.

Assessment of this unit of competency may be in conjunction with assessment of other units commonly performed at the same time in normal job roles.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and

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EVIDENCE GUIDE

the practical requirements of the workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to remedial waterproofing processes

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RANGE STATEMENT

	• relevant Australian standards • safe work procedures relating to remedial waterproofing processes • signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Planning and preparation include:	• assessment of conditions and hazards • determination of work requirements and safety plans and policies • equipment defect identification • work site inspection.

Safety (***OHS***) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
	• handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
	• hazard control
	• hazardous materials and substances, including cement and curing agents
	• organisational first aid
	• PPE prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
	  • earth leakage boxes
	  • lighting
	  • power cables, including overhead service trays, cables and conduits
	  • restricted access barriers
	  • surrounding structures
	  • traffic control
	  • trip hazards
	  • work site visitors and the public
	  • working at heights
	  • working in confined spaces
	  • working in proximity to others
	• use of firefighting equipment

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RANGE STATEMENT

	• use of tools and equipment • workplace environmental requirements and safety.

Tools and equipment include:	• angle grinders
	• chisels
	• electric drills and screwdrivers
	• hammers
	• impact drills
	• measuring tapes and rules
	• mixing equipment
	• pressure injection equipment, including:
	  • cartridge applications
	  • compressors
	  • hoses
	  • pumps
	  • vacuum pumps
	• spirit levels
	• straight edges.

Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications • workplace operations and procedures.
Remedial injection ***materials*** include:	• cementitious products • epoxies • expanding polyurethane foam • polyurethane resin systems • silicon, silane and siloxane products • single and dual component resins.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management.
Identification includes:	• preparation of the waterproofing material • application to a structural substrate.
Defects that may be addressed using injection methods include:	• cracks in concrete walls and floors • damp or wet areas occurring in structures.
Waterproofing surface applications include:	• floor surfaces • roof surfaces • standard wet areas

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RANGE STATEMENT

	• wall surfaces.
Remedial waterproofing systems include:	• barrier of silicon to stop rising damp • concrete crystallisation or by injection • concrete repair injection hydrostatic barrier coatings • membranes • saturants on an external wall (in case of flood).

Substrates include:	• aerated autoclaved concrete materials:
	  • Hebel
	  • Thermolite
	• blockwork
	• brickwork
	• cement render
	• ferrous and non-ferrous piping
	• fibrous cement sheeting
	• pre-cast concrete
	• polyvinyl chloride (PVC)
	• reinforced in situ concrete
	• timber and timber-based products
	• wet area plasterboard.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCMCM7001A Plan and manage complex projects

Modification History

Not Applicable

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Unit Descriptor

Unit descriptor	This unit of competency specifies the outcomes required of senior managers responsible for identifying, planning, controlling and finalising complex projects. The unit addresses the management of projects of significant scope and duration, for example, the development and implementation of a major new program or service, or the construction or design of a significant new piece of infrastructure. The environment in which the project is managed is also complex and involves the management of a project team which typically will include staff with diverse skill sets. The management of complex projects also involves significant reporting requirements. Licensing, legislative, regulatory or certification requirements may apply to this unit and so the varying state or territory requirements should be confirmed with the relevant body.

Application of the Unit

Application of the unit	This unit supports the attainment of skills and knowledge required for competent workplace performance in organisations of all sizes. It will support managers in all sectors of the construction industry who must exercise the skills necessary to ensure projects are planned and managed effectively in order to deliver the required outcomes on time and within budget. The unit may be contextualised to the specific needs, and skills and knowledge requirements, of all sectors within the construction industry provided the essential outcomes of the unit are not changed.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units	Nil

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify the strategic and operational needs of the project during the planning phase.	1.1. The project's ***strategic context*** and requirements are identified and considered. 1.2. The organisation's strategic and business plans and their output requirements are identified and considered. 1.3. Client requirements and the impact of ***legislation and industry codes and standards*** are identified and fully explored. 1.4. A ***risk management analysis*** is conducted and a risk management plan is developed and documented.
2. Prepare the project plan.	2.1. Precise ***specifications and terms of reference*** for the project are defined and documented. 2.2. Project budget is identified, specified to a level that can be used for the management of sub-tasks, and documented. 2.3. Skills needed for the successful completion of the project are defined. 2.4. Physical and other resources required to support the project are defined, documented and secured. 2.5. Timelines, schedules and critical path for the project are developed and documented, taking into consideration contingencies and planning for time slippages. 2.6. A consultation strategy or process that will be used to inform clients, contractors and other interested parties of the project's progress, and seek their input as required, is defined and documented.
3. Assemble the project team and commence work.	3.1. Appropriate project team members are secured and briefed regarding the project, their roles, levels of delegated responsibility and the outcomes to be achieved. 3.2. Effective communication processes are put in place to coordinate work and inform team members of progress. 3.3. Clear reporting processes for team members are identified and communicated.
4. Manage the project.	4.1. Project progress is monitored according to project plan requirements, using appropriate ***project management tools*** and methodologies. 4.2. Team members are supported and their output is managed against the key performance indicators

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ELEMENT	PERFORMANCE CRITERIA
	identified in the project plan. 4.3. Corrections, changes and additions are made to the project plan in light of changing circumstances to ensure project aims and outcomes are met. 4.4. Resourcing to support the project is monitored and corrections are made to reflect changing circumstances. 4.5. Reporting of overall project progress is made to senior management and/or funding bodies as required and in line with the project plan.
5. Finalise the project.	5.1. The project is finalised in line with the project plan. 5.2. Required handover to staff members responsible for the ongoing implementation or maintenance of project products or services is conducted efficiently, effectively and in line with organisational procedures. 5.3. Project team members and relevant stakeholders are debriefed about the conduct of the project and the outcomes achieved. 5.4. A report is prepared analysing the strengths and weaknesses of the project plan and the conduct of the project.
6. Use the project to contribute to improved policies and processes.	6.1. Opportunities for wider organisational learning, including changes to processes or policies generated by the project, are identified and analysed. 6.2. Opportunities for future further developments following project completion are forwarded for consideration by senior management. 6.3. The strategic impact of the project is considered and fed into the organisation's ongoing strategic planning processes.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• project planning and execution

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REQUIRED SKILLS AND KNOWLEDGE

• risk management planning
• time management
• high level written and oral communication
• human resource management
• team leadership
• numeracy skills for budgeting and financial management
• proactive thinking
• decision making
• high level problem solving
• research
• critical and analytical thinking
• comparative analysis
• operating computer software packages and systems, including:
  • word processing
  • spreadsheet
  • email
  • internet
• skills specific to fire systems design, including:
  • operating computer software packages and systems, including:
  • proprietary project management software
  • proprietary hydraulic calculation software
  • proprietary estimating software
  • parametric modelling software
  • language and literacy skills for:
  • searching, accessing, reading, interpreting and applying current relevant legislation, codes and standards
  • updating knowledge of products, software systems and technology
  • reading and interpreting drawings, plans and specifications, including architectural, structural, mechanical, hydraulic and electrical
  • researching and evaluating competing technologies in new products and systems
  • reviewing and commenting on reports (e.g. consultant fire engineer), including building, insurance and corporate

Required knowledge
• budgets and financial plans • concepts of risk management planning and processes • tools and models of project management • reporting mechanisms • relevant legislation, codes, standards, and sustainability requirements and ratings,

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REQUIRED SKILLS AND KNOWLEDGE
including: • energy conservation • water conservation • organisational frameworks and functions, including: • industry associations • enterprises • government bodies • knowledge specific to fire systems design, including: • fire engineering principles, including: • engineered solutions • innovative fire systems • fire modelling • roles and responsibilities of relevant building project personnel, including: • architect • lead contractor • mechanical engineer • hydraulic engineer • electrical engineer • computer software functions and operation, including relevant proprietary software • relevant current legislation, codes and standards, including: • building Acts • building regulations • infrastructure supply regulations • the Building Code of Australia • Australian standards for fire systems • international standards for fire systems • other fire system standards commonly required by building insurers • passive fire safety elements: • identification of passive elements • impact of fire systems design on passive elements • specifications required to safeguard integrity of passive fire element performance where penetrations are necessitated by the fire systems design • water-based fire systems technology and components, including: • wet pipe sprinkler systems • deluge and drencher systems • dry pipe sprinkler systems • pre-action sprinkler systems

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REQUIRED SKILLS AND KNOWLEDGE
• early suppression fast response (ESFR) • hydrants, hose reels and monitors • water supply tanks • fire pump sets • detection and warning systems technology and components, including: • emergency warning and intercommunications systems (EWIS) • fire detection and alarm systems • smoke control systems • emergency lighting systems • technology and components of special hazard fire systems, including: • foam systems (low expansion, medium expansion and high expansion) • gaseous agent systems (carbon dioxide, inert gas and halocarbon gases) • water spray systems (deluge, medium/high velocity water spray and high speed deluge) • chemical systems' technology and components, including: • powder • wet chemical

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that the simulated or project-based assessment fully replicates workplace conditions, materials, activities, responsibilities and procedures. This unit could be assessed as an activity involving the management of a complex project and should include establishing, using and evaluating effective project management processes.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the required skills and knowledge specified within this unit. In particular the person should demonstrate: • the successful design, implementation, management and finalisation of a complex project, including the management of planning processes, scheduling, human resources, reporting and response to contingencies • the ability to ensure projects undertaken are aligned with and support organisational strategies and requirements • the ability to learn from project outcomes and refine and improve future project management processes.
Context of and specific resources for assessment	Assessment of essential underpinning knowledge may be conducted in an off-site context. It is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • access to codes and standards • access to legislation relevant to the jurisdiction and the project being undertaken • project documentation, including design or

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EVIDENCE GUIDE	
	project brief, drawings, specifications, construction schedules and other supporting documents • research resources, including product information and data • theoretical texts and other information to support the assessment of the unit's required skills and knowledge • relevant computer software packages and suitable hardware.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments.
Guidance information for assessment	Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

RANGE STATEMENT
The range statement relates to the unit of competency as a whole. It allows for different

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RANGE STATEMENT	
work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
The ***strategic context*** for the project will include the operating environment in which the project will be conducted. For example:	• fire systems design sector, including the development of high risk and high value fire systems design projects.
Legislation and industry codes and standards that may impact on the project design and delivery will be sector specific. For the fire systems design sector they may include:	• building Acts • building regulations • infrastructure supply regulations • the Building Code of Australia • Australian standards for fire systems • international standards for fire systems • other fire system standards commonly required by building insurers, including the U.S. National Fire Protection Association (NFPA) standards.
Risk management analysis may include consideration of:	• public liability • safety of staff • workers compensation claims • business continuity (e.g. emergency plans for activities to continue in the event of loss of building, equipment or systems) • property development and maintenance • changing government policy or funding arrangements • environmental concerns (e.g. pollution, hazardous waste, tree retention policies).
Specifications and terms of reference for the project may include an accurate and complete:	• definition of the project aims • description of the outcomes to be achieved using, wherever possible, the nomination of clear metrics • description of all stakeholders • description of the project parameters (scope of operations, flexibilities involved, etc.) • identification of the budget • specification of the timescale • specification of the communication strategy to be used.

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RANGE STATEMENT	
Project management tools typically will be computer-based and may:	• be in-house or proprietary software • use critical path analysis • incorporate the use of Gantt or PERT charts • incorporate scheduling and reporting templates.

Unit Sector(s)

Unit sector	Common

Co-requisite units

Co-requisite units	Nil

Competency field

Competency field	Senior management

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CPCMCM7002A Manage the quality of projects and processes

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency specifies the outcomes required to establish performance measures, and review and improve the management and accountability of processes and projects. The unit covers the importance of the need for quality control and responsibility for the provision of service outcomes to customers. The management and driving of organisational change is a major focus of the unit. Licensing, legislative, regulatory or certification requirements may apply to this unit and so the varying state or territory requirements should be confirmed with the relevant body.

Application of the Unit

Application of the unit	This unit supports the attainment of skills and knowledge required for competent workplace performance in organisations of all sizes. It will support managers with responsibility in all sectors. The unit may be contextualised to the specific needs, and knowledge and skill requirements, of all industries provided the essential outcomes of the unit are not changed.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units	Nil

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish the parameters for the delivery of a quality project or process.	1.1. ***Concepts, principles and tools of quality management and continuous improvement*** are researched and analysed. 1.2. Extensive research is undertaken to determine the current and future service requirements of customers. 1.3. Recommended or anticipated changes to services and processes are communicated to senior management for review.
2. Establish and implement performance measurement strategies.	2.1. Financial and ***non-financial*** performance measures and evaluation criteria for the specific project or service delivery are established and agreed upon by relevant stakeholders and communicated to relevant staff and service providers. 2.2. Appropriate financial and non-financial benchmarks are determined and agreed to by relevant stakeholders. 2.3. Project and services are monitored to ensure they meet identified needs and service expectations. 2.4. Feedback from customers is communicated to relevant areas within the organisation and incorporated into performance reviews. 2.5. Trends in ***customer/stakeholder satisfaction*** and service usage are monitored to identify opportunities for improvements to services or processes. 2.6. Issues of responsiveness and accessibility are reviewed and reported.
3. Facilitate accountability for project and service outcomes.	3.1. Project management systems, ***reporting mechanisms*** and processes are established and communicated to staff and ***service providers***. 3.2. The results of service reviews against desired targets are reported according to standard organisational procedures. 3.3. Tenders and contracted works are regularly monitored and adverse variations in established performance targets are immediately addressed. 3.4. Quality and efficiency of operational processes are measured and documented. 3.5. Service shortfalls are analysed and resolved in line with company policies and procedures, including customer service standards.
4. Develop and	4.1. The need for change in organisational processes and

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ELEMENT	PERFORMANCE CRITERIA
implement change management processes.	work culture to support project or service delivery is identified. 4.2. A ***change process*** to address the need is identified or developed, and implemented. 4.3. Changes to operational processes, projects or services delivered are recommended and communicated to appropriate personnel with supporting information. 4.4. Staff members are adequately informed of improvement plans, their goals and changes to operational procedures. 4.5. Appropriate methods are employed to gain commitment for change. 4.6. Improvement projects are implemented within agreed timelines and coordinated effectively. 4.7. The effectiveness and benefits of implemented changes are monitored and reported. 4.8. Outcomes of improvements are reviewed and used for further learning and continuous improvement by being shared across the company.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills

• high level management and leadership skills
• ability to identify and evaluate potential obstacles to change
• analysis of organisational systems, processes and activities
• problem solving and creative thinking skills to develop a range of possible options
• developing a range of possible options in solving problems
• numeracy skills for:
  • calculating measures of performance
  • analysing financial reports
• language and literacy skills for:
  • communicating service requirements and recommended improvement plans
  • researching

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REQUIRED SKILLS AND KNOWLEDGE

• accessing, reading, interpreting and applying current relevant legislation, codes and standards
• computer skills for:
  • word processing
  • spreadsheets
  • emails
  • internet searching
• negotiation and conflict management

Required knowledge

• change management processes
• continuous improvement processes
• computer software functions and operation
• knowledge specific to fire systems design, including:
  • relevant current legislation, codes and standards, including:
  • building Acts
  • building regulations
  • infrastructure supply regulations
  • the Building Code of Australia
  • Australian standards for fire systems
  • international standards for fire systems
  • other fire system standards commonly required by building insurers
  • passive fire safety elements:
  • identification of passive elements
  • impact of fire systems design on passive elements
  • specifications required to safeguard integrity of passive fire element performance where penetrations are necessitated by the fire systems design
  • water-based fire systems technology and components, including:
  • wet pipe sprinkler systems
  • deluge and drencher systems
  • dry pipe sprinkler systems
  • pre-action sprinkler systems
  • early suppression fast response (ESFR)
  • hydrants, hose reels and monitors
  • water supply tanks
  • fire pump sets
  • detection and warning systems technology and components, including:
  • emergency warning and intercommunications systems (EWIS)
  • fire detection and alarm systems

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REQUIRED SKILLS AND KNOWLEDGE
• smoke control systems • emergency lighting systems • technology and components of special hazard fire systems, including: • foam systems (low expansion, medium expansion and high expansion) • gaseous agent systems (carbon dioxide, inert gas and halocarbon gases) • water spray systems (deluge, medium/high velocity water spray and high speed deluge) • chemical systems' technology and components, including: • powder • wet chemical

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that the simulated or project-based assessment fully replicates workplace conditions, materials, activities, responsibilities and procedures. This unit could be assessed as an activity involving the establishment and implementation of performance parameters and measures to ensure the accountability and effective delivery of projects and processes.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the required skills and knowledge specified within this unit. In particular the person should demonstrate: • knowledge of the concepts, principles and tools used in quality management and continuous improvement processes • knowledge of the concepts, principles and tools of change management • the mathematical ability to calculate benchmarks and monitor performance • research skills • analytical and report writing skills • leadership skills that facilitate quality outcomes and organisational change • the ability to learn from project outcomes and refine and improve future processes.
Context of and specific resources for assessment	Assessment of essential underpinning knowledge may be conducted in an off-site context. It is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • access to relevant codes and standards • access to legislation relevant to the jurisdiction and the project being undertaken

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EVIDENCE GUIDE	
	• project, process or service documentation • research resources, including product, process or technology information and data applicable to the workplace • theoretical texts and other information to support the assessment of the unit's required skills and knowledge • relevant computer software packages and suitable hardware.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments.
Guidance information for assessment	Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

RANGE STATEMENT
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating

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RANGE STATEMENT	
conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Concepts, principles and tools of quality management and continuous improvement include:	• Total Quality Management (TQM), including Six Sigma • ISO 9000 and the processes for certification • failure mode and effects analysis • benchmarking • continuous improvement methodologies, including Kaizen • 'lean transformation' processes, sometimes known as the 'Toyota Lean Model' or the 'Toyota Production Model'.
Non-financial performance indicators may include:	• customer satisfaction ratings • completion times for projects measured against project plans • volume of repeat business • number of business referrals • demonstrated compliance of work with codes and standards • industry awards received • performance in industry benchmarking studies.
Methods of measuring ***customer/stakeholder satisfaction*** include:	• gap analysis approach • customer satisfaction monitoring (CSM) approach, e.g. telephone, questionnaires, face-to-face interview or in-depth interview • developing customer-focused key performance indicators (KPI) to support customer monitoring procedures.
Reporting mechanisms may include:	• non-financial and financial system reports, including budgets • informal reporting methods, such as regular team and departmental meetings.
Service providers may include:	• contractors • suppliers of materials.
The ***change process*** should be planned and monitored and may entail:	• processes to plan for the change • processes to implement the change • processes to reinforce the change • steps to support staff during the change, including:

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RANGE STATEMENT	
	• coaching and mentoring • training interventions • revised process documentation • feedback and appraisal processes • reward and recognition processes.

Unit Sector(s)

Unit sector	Common

Co-requisite units

Co-requisite units	Nil

Competency field

Competency field	Senior management

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CPCPCM2039A Carry out interactive workplace communication

Modification History

Changes to performance criteria, required skills, range statement and critical aspects
Not equivalent to CPCPCM2002A

Unit Descriptor

This unit of competency specifies the outcomes required to communicate effectively through oral, visual and written means of communication in order to facilitate work practices that are safe, meet specifications and provide quality outcomes.

Application of the Unit

This unit of competency supports development of skills for effective communication techniques underpinning work in the plumbing and services industry.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	Apply oral communication.	1.1	Oral instructions are given, clarified and confirmed.
		1.2	***Oral communication with others*** is clear, accurate and in a language suitable to the industry and workplace.
		1.3	Current technology that follows industry convention is used during oral communication.
2	Apply visual communication.	2.1	***Visual communication*** is used that follows accepted industry practice or social convention.
		2.2	Attention of the communicating parties is obtained, confirmed and acknowledged.
		2.3	Visual communication is clarified and confirmed at each step.
		2.4	Visual communication that is unclear or ambiguous is questioned or visually cancelled.
		2.5	Instances of unclear visual communication are followed up to avoid repeated problems.
3	Apply written communication and signage.	3.1	***Written communication*** is accessed.
		3.2	Instructions for job or daily activities are accessed and clarified.
		3.3	Regulatory authorities' and workplace documentation required to record and report work to be undertaken is completed according to workplace procedures for quality, time and detail.
		3.4	Technical instructions relating to job process, criteria and equipment operations are accessed, interpreted and applied.
		3.5	Regulatory and work signage is identified, clarified and responded to correctly.
		3.6	Written detail is provided to maintain the individual's personal records.

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3.7 Information bulletins, circulars or equivalent that impact on the individual are accessed and interpreted.

3.8 ***Sustainability principles and concepts*** are applied to written communication.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - complete written reports and other relevant documentation
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - negotiate with employers
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - read and interpret:
    - documentation from a variety of sources
    - material safety data sheets (MSDS)
    - signs
    - work safety procedures and instructions
  - report hazards, risks and faults in equipment
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- how instructions are conveyed in the workplace
- how work schedules, charts, bulletins and memos are used
- industry-relevant technology to support oral communication
- industry terminology
- job safety analysis (JSA) and safe work method statements (SWMS)
- personnel records and their maintenance
- standardised signage
- visual signalling procedures
- workplace documentation requirements
- workplace English

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of:
	• accessing and interpreting written work safety procedures, job instructions, job processes, equipment and operator instructions
	• applying sustainability principles and concepts
	• completing workplace documentation in relation to work, stores and tools and equipment and personal and workplace administration
	• communicating effectively using mandatory visual methods, including:
	  • establishing communication
	  • lateral and vertical movement direction
	  • request for a face-to-face meeting
	  • stop or cancel last communication
	• communicating with others in a clear and accurate manner
	• receiving, clarifying and confirming oral work instructions
	• reviewing personnel records and completing personal information input proformas.

Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

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Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured

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learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Oral communication with others is an integral part of routine work that includes communication with supervisors, contractors, co-workers and clients. It:

- may include:
  - languages other than English
  - oral (face to face or remote)
  - signage
  - visual or written
- must include:
  - acknowledgments
  - oral communications media, including:
    - face to face
    - indirect method, such as phone or two-way radio
  - requests for information
  - safety briefings

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- work instructions.

Visual communication must include:

- establishing communication
- lateral and vertical movement direction
- other signals appropriate to the task and workplace
- request for a face-to-face meeting
- stop or cancel last communication.

Written communication may include:

- dockets and order forms
- emails
- equipment logs
- equipment operator instructions
- input and output documents
- personnel records
- plans, drawings and specifications
- schedules and rosters
- servicing checklists
- site safety statistics
- SMS text
- training records
- work instructions and procedures
- work safety procedures or equivalent
- work signage.

Sustainability principles and concepts:

- cover the social, economic and environmental use of resources to meet current and future needs
- may include:
  - efficient use and recycling of material
  - energy efficiency.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

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Custom Content Section

Not applicable.

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CPCPCM2040A Read plans and calculate plumbing quantities

Modification History

Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPCM2004A

Unit Descriptor

This unit of competency specifies the outcomes required to use and interpret plans and specifications associated with construction work, and accurately complete measurements and calculations to establish quantities of materials for the plumbing and services industry.
The unit requires the interpretation of plans, drawings and specifications to interpret requirements, and making measurements and calculations to determine quantities of plumbing materials.

Application of the Unit

This unit of competency supports skills to read and interpret plans for a variety of plumbing and services applications.
Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained. It may be a customer's premises or employer's workplace, either on or off-site.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans, drawings, specifications and standards are obtained and required calculations are identified.
		1.2	***Work health and safety*** (WHS) requirements associated with reading plans, calculating plumbing requirements and the workplace environment are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Work area and materials are prepared to support the efficient reading of plans and the calculation of plumbing requirements.
2	Identify types of plans and drawings and their functions.	2.1	Plans and ***drawings*** used in the plumbing industry are identified.
		2.2	Key functions of each type of drawing are identified.
		2.3	Key users of drawings are identified.
3	Identify commonly used scales, symbols and abbreviations.	3.1	Commonly used scales, symbols and abbreviations are used.
		3.2	Function of legend is understood and identified.
4	Locate and identify key features on a	4.1	Key features and dimensions of sectional details and ***elevations on a plan*** are identified and located.
		4.2	Location and types of services are identified.

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	services plan.	4.3	General and structural features and major horizontal and vertical measurements are located.
5	Read and interpret job specifications.	5.1	Purpose of job specification is identified.
		5.2	Details in job specification are obtained.
		5.3	Job specifications are read in conjunction with plans.
6	Obtain measurements and perform calculations	6.1	Work ***measurements*** are obtained.
		6.2	Quality assurance requirements associated with calculations are applied.
		6.3	Measurements and dimensions are obtained from plans.
		6.4	Simple ***calculations*** are carried out.
7	Calculate material quantities.	7.1	***Material*** quantities are calculated and recorded from plans and specifications according to workplace procedure.
		7.2	***Information*** from plans, ***specifications*** and work area are obtained from job instructions.
		7.3	Measurements are identified and recorded.
8	Clean up.	8.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice, and job specification.
		8.2	***Tools and equipment*** are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		8.3	Information is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - request relevant documentation and information
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- literacy skills to:
  - complete relevant workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - record calculations, measurements and material quantities
- numeracy skills to apply measurements and calculations
- plan-reading skills, including:
  - boundaries
  - easements (sewer, stormwater, etc.)
  - existing services
  - orientation
  - pedestrian and vehicular access
  - preservation orders
  - set backs
  - site features
  - site geography, including levels
  - surrounding buildings and fences
- planning and organising skills to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities

Required knowledge

- job safety analysis (JSA) and safe work method statements (SWMS)
- measurements, calculations and quantities

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- range of plans and specifications relevant to the plumbing and services industry
- relevant Acts, regulations and codes of practice
- simple industry calculations
- symbols, dimensions, terminology and key features of plans
- tools, equipment and materials relative to plans, drawings and specifications
- work schedules, work plans, charts, work bulletins and memos
- workplace safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications for reading plans and calculating plumbing quantities
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications for a project, completing the following in respect of interpreting the plans and determining quantities:
  - apply sustainability principles and concepts
  - identify type and purpose of the plan and drawing
  - identify its dimensions, symbols, abbreviations, key features, title and reference date (as current version)
- identify material types from the specifications, measurements and calculations, indicating items of plumbing material required, ensuring:
  - correct selection and use of appropriate processes, tools and equipment
  - completion of all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

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Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured

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learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control, including of electrical hazards
- hazardous materials and substances
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- use of firefighting equipment
- use of first aid equipment
- use of tools and equipment
- workplace environment and safety.

Quality assurance requirements may include:

- Australian standards
- environmental policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk

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management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Types of ***drawings*** may include:
- drainage plans
- elevations and sections
- floor plans
- hydraulic plans
- mechanical services and drainage plans
- sanitary plans
- sewerage plans
- site plans
- specifications.

Key features of detailed ***elevations and plans*** may include:
- boundaries
- building lines
- cross-sections of construction details
- easements
- layout of rooms
- location of works relative to other buildings
- orientation
- service locations
- shape of building and structure
- type of construction
- type of structure, including structural members
- vertical and horizontal measurements.

Measurements may include:
- all dimensions used in plumbing
- laser or similar technology
- SI units of measurement
- the use of:
  - calipers
  - dividers
  - rulers
  - squares
  - tape measures.

Calculations:
- are to be performed manually or with the aid of a

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calculator
- require numeracy skills to apply the basic arithmetic calculations of addition, subtraction, multiplication and division in order to estimate simple projects and determine consumables required for a task, and may include:
  - area
  - circumference
  - diameter
  - gradient
  - length
  - mass
  - perimeter
  - pressure
  - ratios (e.g. ingredients, elements and triangulation)
  - scales
  - volume.

Materials for reading plans and calculating plumbing quantities may include:
- drawings
- plans
- specifications.

Information may include:
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- organisation work specifications and requirements
- recognised formulas or tables accepted by the regulatory authority
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing and gasfitting authority regulations
- relevant Australian standards
- safe work procedures relating to reading plans and calculating plumbing requirements
- verbal, written and graphical instructions, including:
  - charts and hand drawings
  - plans and sketches

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- job drawings
- material safety data sheets (MSDS)
- memos
- plans and specifications
- signage
- work bulletins
- work schedules.

Key features of ***specifications*** may include:

- material details
- preferred suppliers
- quality of finishes
- quantities
- specific skill requirements.

Tools and equipment may include:

- calculators
- laser measuring devices
- rulers, dividers, tape measures or squares.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPCM2041A Work effectively in the plumbing and services sector

Modification History

Prerequisite unit updated
Content on sustainability added to PC and range statement
Minor updates to content throughout
Changed critical aspects
Not equivalent to CPCPCM2021A

Unit Descriptor

This unit of competency specifies the outcomes required to prepare for and sustain effective work within the plumbing and services sector of the building and construction industry. It requires the ability to accept instructions, work with others, plan activities and perform tasks, as well as participate in workplace planning and meetings. Outcomes include effective participation in a plumbing and services workplace to promote a harmonious and efficient work environment.
The unit covers the identification and clarification of the sector work context and setting, acceptance of workplace responsibility by the individual, working in a team, individual career path improvement and participation in meetings.

Application of the Unit

This unit of competency supports understanding of the structure and employment conditions in the sector, and its regulatory and other requirements.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Identify the industry work context and setting.	1.1	Nature and scope of plumbing and services functions, activities, contribution to public health and safety, economic importance, employment opportunities and career paths are identified.
		1.2	Plumbing and services sector employment conditions, responsibilities and obligations are identified.
		1.3	Trends in technology (including IT) and processes likely to impact on the plumbing and services sector are identified.
		1.4	Requirements of relevant plumbing legislation, regulations, standards and codes of practice are accessed through a variety of mediums, understood and implemented.
		1.5	Specific ***work health and safety (WHS) requirements*** of the plumbing industry are understood and implemented.
		1.6	Quality assurance and workplace quality requirements are understood and implemented.
		1.7	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
2	Organise and accept responsibility for own workload.	2.1	Priorities and deadlines are established in consultation with others and recorded.
		2.2	Work activities are planned with appropriate time management and progress of work is communicated to others whose personal work plans and timelines may be affected.

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		2.3	Work is completed to the standard expected in the workplace and according to guidelines, directions, instructions and ***organisational requirements***.
		2.4	Variations and difficulties affecting work requirements are identified through regular reviews and action is taken to report these issues to appropriate personnel.
		2.5	Additional support or modification of arrangements to improve work outcomes is communicated clearly to appropriate personnel.
3	Work in a team.	3.1	Workplace goals and the contributions to be made by teams are identified.
		3.2	Individual contributions to ***team*** activities are identified, agreed and reviewed periodically with the team.
		3.3	Defined roles and strengths of other ***team members*** are identified.
		3.4	Assistance and encouragement are provided to other team members wishing to enhance their role and the role of the team.
		3.5	Ground rules for team operations are reviewed and changes are made through team consultative processes.
		3.6	Team improvements are initiated and encouraged from team members.
		3.7	Causes of disharmony and other barriers to achievement are promptly resolved or referred to the appropriate party for resolution.
4	Participate in identifying and pursuing own development needs and processes.	4.1	The competencies for the workplace are identified.
		4.2	Organisational structure, career paths and own development opportunities appropriate to the workplace are identified.
		4.3	Steps are taken, in consultation with appropriate personnel, to identify ***own learning needs*** for future work requirements.
		4.4	Appropriate opportunities to learn and develop required competencies are identified and pursued with the

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			appropriate people.
5	Participate in workplace meetings.	5.1	***Meeting*** procedures and objectives are identified and applied.
		5.2	Points of view and comments, including agreement and dissent are presented in a logical, persuasive and orderly manner.
		5.3	Points of view of other members are given due consideration.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand in order to consult with colleagues, communicate work progress, report problems, request support, work in a team and participate in meetings
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - interpret information from a variety of sources
  - record work priorities and deadlines
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to:
  - use computers and download relevant information
  - use mobile communication technology
  - access and understand site-specific instructions in a variety of media

Required knowledge

- basic conflict management
- basic job and skill analysis techniques
- interpersonal communication
- job safety analysis (JSA) and safe work method statements (SWMS)
- meeting procedures
- plumbing and services streams and career structure and requirements, including business opportunities and requirements
- regulatory, legislative, standards and codes of conduct pertaining to the plumbing and services sector
- relevant industrial awards and agreements
- relevant legislative provisions covering discrimination and equal employment opportunity
- site and team work structure and methods
- training and development opportunities

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- work communication procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- applying sustainability principles and concepts
- communicating and working effectively and safely with others
- complying with commonwealth, state and territory WHS legislation applicable to workplace operations
- complying with organisational policies and procedures, including quality assurance requirements
- an understanding of employment in, and economic, public health and safety importance of, the plumbing and services sector
- identifying personal development needs
- identifying relevant standards and industry codes of practice
- identifying workplace codes of conduct
- identifying employment conditions and their source
- understanding of regulatory requirements within the plumbing and services industry
- locating, interpreting and applying relevant information, standards and specifications
- participating in workplace meetings
- identifying actions to manage workplace and/or personal conflict situations
- setting personal and work team goals.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and

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environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace

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- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Plumbing and services sector employment conditions may include:

- bulletins and newsletters
- enterprise agreements
- enterprise procedures for handling industrial disputes and grievances
- industrial awards
- industry and workplace codes of practice
- workplace agreements.

Responsibilities and obligations must include:

- codes of conduct
- job description and employment arrangements
- organisation's policy relevant to work role
- skills, training and competencies
- supervision and accountability requirements,

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	including WHS • team structures.
Work health and safety requirements are to be according to commonwealth, state and territory legislation and regulations and may include:	• handling of materials • hazard control, including of electrical hazards • identifying hazardous materials and substances • personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices • use of firefighting equipment • use of first aid equipment • use of tools and equipment • workplace environment and safety.

Sustainability principles and concepts:	• cover the current and future social, economic and environmental use of resources
	• may include:
	  • selecting appropriate material to ensure minimal environmental impact
	  • efficient use and recycling of material
	  • efficient energy and water use
	  • disposing of waste material to ensure minimal environmental impact.

Organisational requirements may be included in:	• access and equity principles and practices • anti-discrimination and related policy • business and performance plans • ethical standards • goals, objectives, plans, systems and processes • legal and organisation policy, guidelines and requirements • quality and continuous improvement processes • standards and defined resource parameters.
Team:	• may be referred to as crews, gangs, shifts or other industry accepted terms • may include employer organisation and worksite organisation.

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Team members may include:

- coach or mentor
- employee representative
- peers and work colleagues
- employer, supervisor or manager
- other relevant personnel.

Own learning needs may include:

- assessment processes
- competency achievement and maintenance processes
- formal vocational education
- on-the-job training and job rotation
- professional development
- recognition of prior learning.

Meetings:

- involve small team, section and workplace meetings
- may be formal or informal
- involve notification and scheduling, including:
  - local coordination of procedural and operational issues
  - organising time, place and purpose
  - task discussions.

Unit Sector(s)

Functional area

Unit sector	Plumbing and services

Custom Content Section

Not applicable.

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CPCPCM2043A Carry out WHS requirements

Modification History

Changes to application, elements and performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPCM2023A

Unit Descriptor

This unit of competency specifies the outcomes required to carry out work health and safety (WHS) requirements through safe work practices in a plumbing and services work environment.
The unit requires the performance of work in a safe manner through awareness of risks, work requirements and the planning and performance of safe work practices with concern for personal safety and the safety of others.
It includes the initial response to workplace emergencies; the safe use of electricity; the identification of hazardous materials, including asbestos; and compliance with legislated work safety practices.

Application of the Unit

This unit of competency supports safe work practices for the plumbing and services industry. Site location for work application may be either domestic or commercial and may be a new work site or an existing structure or fitting being renovated, extended, restored or maintained. It could also be conducted in an on or off-site workshop or at a customer's premises.
The unit does not cover the removal of asbestos, which is a licensed activity.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Participate in workplace induction.	1.1	***Workplace induction*** is received.
		1.2	Location of emergency equipment is identified.
		1.3	Current workplace emergency and evacuation procedures are identified.
		1.4	Identify safe working conditions with employer.
		1.5	Identify employee and employer rights and responsibilities regarding safe working conditions.
2	Assess risks.	2.1	Hazards in the work area are identified, assessed and reported to designated personnel.
		2.2	WHS issues and risks in the work area are identified, assessed and reported to designated personnel.
		2.3	***Safe work practices***, procedures and instructions are followed.
		2.4	WHS, hazard, accident or incident reports are completed according to workplace procedures and ***statutory and regulatory authorities*** and legislation.
3	Identify hazards and hazardous materials on work site.	3.1	Hazardous materials on a work site are identified, secured and tagged using appropriate signs and symbols; and if appropriate, handled and used according to company and legislated procedures.
		3.2	Measures for controlling risks and construction hazards are applied effectively and immediately.

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		3.3	***Asbestos-containing materials (ACM) are identified*** on a work site ***and reported*** to designated personnel.
4	Plan and prepare for safe work practices.	4.1	Quality assurance requirements of company operations and safe work practices are identified and adhered to.
		4.2	Personal protective equipment (PPE) is selected, correctly fitted and used according to the requirements of the job.
		4.3	Tools and equipment are selected consistent with safe work practice requirements, checked for serviceability, and any faults are reported to supervisor.
		4.4	Required barricades, hoardings and signage are determined and erected at job location.
		4.5	Material safety data sheets (MSDS) are identified and applied.
		4.6	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
5	Use safe work practices to carry out work.	5.1	Work is carried out safely and according to state or territory statutory requirements and company policy.
		5.2	***Safety hazards*** and common workplace accidents and incidents are identified in the course of work and reported according to policy.
		5.3	Industry, site and personal safety rights and responsibilities are applied.
		5.4	Prohibited tools and equipment in areas with identified asbestos are identified and isolated.
		5.5	Firefighting equipment is selected and used according to type of fire and correct operating procedures.
		5.6	Current site emergency and first aid procedures are followed.

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6	Maintain safety of self and others.	6.1	Safety signs, identified in terms of colour and shape, symbols and alarms, are adhered to.
		6.2	Hazardous chemicals and materials are identified, handled and stored, maintaining the safety to self, others and the environment.
		6.3	Incidents are reported according to legislative requirements and workplace procedures.
		6.4	Common causes of accidents in the industry are identified and prevention measures implemented in line with site induction.
		6.5	Site area is maintained to prevent incidents and accidents and protect self and others
7	Use electricity safely.	7.1	Safest supply and route for electrical supply are determined.
		7.2	Leads are supported and placed according to regulations.
		7.3	Power board visual check is conducted.
		7.4	Leads and equipment are checked for tags and visual damage.
		7.5	Electrical hazards are identified and reported.
8	Apply emergency response.	8.1	***Emergencies*** are identified.
		8.2	***Emergency response*** is provided according to company procedures and requirements.
		8.3	Details of actions taken are reported according to company procedures and requirements using appropriate communications.
9	Clean up work site area.	9.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specifications.
		9.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations

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and standard work practices.

9.3 Information is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - complete written reports and other relevant documentation
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to:
  - evaluate safety issues in the workplace and determine appropriate action
  - recognise WHS hazards, including asbestos, and take all opportunities to alleviate safety problems in a variety of construction work sites and environments
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools or materials
- literacy skills to read and interpret:
  - documentation from a variety of sources
  - MSDS
  - work safety procedures and instructions
- self-management skills to deal calmly and effectively with any potential safety problems and work closely with other team members and supervisors to ensure safe working conditions are maintained
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- asbestos management code relating to prevention of exposure
- job safety analysis (JSA) and safe work method statements (SWMS)
- manual handling techniques
- MSDS
- relevant legislation, regulations and workplace requirements relating to WHS, including hazard reduction and personal safety
- requirements for working in confined spaces and at height, including on rooves

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- tools and equipment prohibited from being used near identified ACM
- risk assessment
- safe work practices in normal working environment
- types, possible location and risks of ACM, including serpentine and amphobile groups and their use in common building materials
- workplace and equipment safety requirements
- workplace hazards and their precautions and reduction
- workplace response to emergencies

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications for applying safe work practices in the workplace
- apply safety requirements throughout the performance of work sequences, including electrical requirements and personal protective clothing and equipment
- apply sustainability principles and concepts
- undertake site and workplace induction
- correctly identify the location of ACM
- understand and apply policies and procedures for reporting presence of ACM to designated personnel
- assess workplace risks and interpret and apply safe work practices
- understand workplace requirements for emergency response, including evacuation procedures
- correctly locate and identify workplace firefighting and other safety equipment and appliances
- correctly select and use appropriate processes, tools and equipment
- safely complete all work to specification
- comply with regulations, standards and workplace instructions, procedures and processes, including reporting and documentation
- communicate and work effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will

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usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further

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learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Workplace induction may include:

- first aid officers and kits
- personnel competent and/or licensed in the safe handling of asbestos
- site induction work site locations
- specific site WHS issues
- specific site requirements.

Safe work practices are to be according to state and territory legislation and regulations and may include:

- handling of materials
- hazard control procedures and procedures for handling hazardous materials and substances
- PPE prescribed under legislation, regulations and workplace policies and practices
- use of firefighting equipment
- use of first aid equipment
- use of tools and equipment
- workplace environment and safety.

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Statutory and regulatory authorities include:	• commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.
Identifying and reporting asbestos-containing materials:	• includes recognising common types of ACM that may be found in construction materials and buildings • covers asbestos rope/fabrics, asbestos cement sheeting, asbestos cement piping and lagging on pipes, bituminous waterproof membrane, millboard, asbestos flues, sheeting under ceramic or vinyl floor or wall tiles in wet areas • involves reporting ACM to person in control of the workplace as set out in the relevant Asbestos Management Code.

Sustainability principles and concepts:	• cover the social, economic and environmental use of resources to meet current and future needs
	• may include:
	  • selecting appropriate components and material
	  • choosing efficient products
	  • using material efficiently
	  • storing and disposing of hazardous material to ensure minimal environmental impact.

Safety hazards may include:	• hazards and risks associated with tools and equipment • inflammable materials and fire hazards • lifting practices • lighting, gases, electricity and water • spillage, waste and debris • toxic and hazardous substances • working at heights • working in confined spaces.
Emergencies may include:	• accidents • fires • injuries • sudden illness.

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Emergency response may include:

- common site signs
- equipment tags
- facility or location signs
- safety barricades and warning signs
- site direction
- traffic signs
- workplace evacuation involving staff and customers.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPCM2045A Handle and store plumbing materials

Modification History

Prerequisite unit updated
Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPCM2025A

Unit Descriptor

This unit of competency specifies the outcomes required to safely handle and store plumbing materials and to identify and address environmental concerns and associated hazards, including the disposal of waste.
It addresses work health and safety (WHS) and environmental requirements to minimise risk to the health and safety of personnel and to the environment.

Application of the Unit

The unit applies to work conducted in a stores holding facility, a work vehicle or on a work site.
Site location for work application may be a new construction site, an existing structure being renovated or extended, service restoration or maintenance, an on or off-site workshop, a work vehicle or a customer's premises.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	***Work health and safety*** and ***environmental requirements*** associated with handling and storage of plumbing materials are adhered to throughout the work.
		1.2	Personal protective equipment (PPE) is selected, correctly fitted and used according to the requirements of the job.
		1.3	***Quality assurance requirements*** for company operations are identified and adhered to.
		1.4	Environmental and waste management requirements are identified and applied.
		1.5	Tools and equipment for handling materials and goods, non-hazardous waste and liquids are selected for the job requirements, checked for serviceability and any faults reported to supervisor.
		1.6	Run-off devices are installed and the maintenance process is determined.
		1.7	Material safety data sheets (MSDS) are located and interpreted for plumbing materials to be handled.
2	Identify hazard and risk control information and measures.	2.1	Hazards are identified and reported to designated personnel according to workplace procedures.
		2.2	Procedures, instructions and ***information*** for controlling hazards and risks are identified and adhered to.
		2.3	Procedures for dealing with accidents, fires and emergencies are adhered to.

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3	Handle, sort and stack materials.	3.1	Handling characteristics of materials are identified and safe manual handling techniques are applied.
		3.2	Materials are identified, selected, stored, stacked, stockpiled and protected clear of traffic ways, for ease of identification, retrieval, prevention of damage and cross-contamination according to legislative, manufacturer and workplace requirements.
		3.3	Signage and barricades are erected to isolate stored materials from workplace traffic or access.
		3.4	Hazardous material is identified for separate handling by authorised persons.
4	Store and transport materials.	4.1	***Materials*** are stored and transported correctly and safely according to MSDS and ***statutory and regulatory authorities'*** requirements.
		4.2	Hazardous material is identified for separate storage, transport and handling by authorised persons.
		4.3	Materials, including flammable liquid and material, gases, bulk liquids and petroleum products are stored in their allocated areas and identified bins and containers according to workplace requirements.
		4.4	Hazardous materials are transported and handled according to regulatory requirements, including appropriate signage, markings and safety precautions.
		4.5	Environment is protected through correct storage and handling of materials.
		4.6	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
5	Clean up.	5.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		5.2	***Tools, equipment*** and signage are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.

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5.3 Spilt liquids and waste material are removed and disposed of according to environmental and safety plans and workplace requirements.

5.4 Information is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - complete written workplace documentation
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - report hazards and follow instructions
  - use and interpret non-verbal communication, such as hand signals
  - use language and concepts appropriate to cultural differences
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to read and interpret plans, specifications and documentation from a variety of sources
- numeracy skills to apply measurements and calculations
- planning and organising skills to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to identify handling and storage requirements for materials used in a plumbing work environment, including identifying, handling and disposing of hazardous and non-hazardous waste
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- categories of materials and their safe handling, storage and transport requirements
- environmental plans, air and water contamination, erosion and sedimentation
- job safety analysis (JSA) and safe work method statements (SWMS)
- MSDS
- WHS and environmental legislation and requirements
- types of waste and their disposal, including an awareness only of the requirements for asbestos handling and disposal
- workplace hazard reporting and hazard handling procedures
- workplace processes and procedures
- workplace safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications for handling and storing plumbing materials
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- completing the following in respect of handling and storing plumbing materials:
  - identify categories of hazardous and non-hazardous waste and indicate specific handling and disposal requirements
  - indicate the requirement for handling and storing hazardous materials
  - indicate the requirement for transporting hazardous materials, such as oxy-acetylene cylinders
  - plan the layout of a facility for the storing and stacking of pipes, fittings, components, non-hazardous liquids and flammable liquids, and materials in a workshop or work site
  - plan the layout of a work vehicle for the carriage of plumbing materials
- carrying out the above work, ensuring:
  - application of sustainability principles and concepts
  - correct identification of handling, storing and disposal procedures
  - correctly addressing WHS and environmental

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concerns
- correct selection and use of appropriate processes, tools and equipment
- completion of all work to specification
- compliance with regulations, standards and organisational quality procedures and processes
- communication and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to

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confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be

- handling of materials

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according to commonwealth, state and territory legislation and regulations and may include:	• hazard control
	• hazardous materials and substances
	• hazards, such as:
	  • airborne contamination
	  • electrical
	  • faulty or damaged components or fittings
	  • fires
	  • gas leaks
	  • hazardous waste, such as asbestos
	  • unsafe storage of materials
	  • unsafe work practices
	  • water contamination
	  • water egress
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
	• use of firefighting equipment
	• use of first aid equipment
	• use of tools and equipment
	• workplace environment and safety.

Environmental requirements are to address:	• air pollution precautions • clean-up protection • waste management • water course protection. •
Quality assurance requirements may include:	• Australian standards • Environment Protection Authority (EPA) • environmental policy • internal company quality assurance policy and risk management strategy • International Standards Organisation • site safety plan • workplace operations and procedures.
Information may include:	• charts and hand drawings • instructions issued by authorised organisational or external personnel • job drawings • manufacturer specifications and instructions

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- MSDS
- memos
- organisational work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
- building codes
  - WHS and environmental requirements
  - plumbing and gasfitting authority regulations
- relevant Australian standards
- safe work procedures relating to handling and storing plumbing materials, including the disposal of waste
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Materials may include:

- gaseous
- liquid
- solid.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Sustainability principles and concepts:

- cover the social, economic and environmental use of resources to meet current and future needs
- may include:
  - efficient use and recycling of materials and resources
  - disposing of waste material.

Tools and equipment may include manual handling equipment, such as:

- barriers
- chain blocks
- forklifts
- hand trolleys
- hoists and jacks
- rollers

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- signage.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPCM2046A Use plumbing hand and power tools

Modification History

Prerequisite unit updated
Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPCM2026A

Unit Descriptor

This unit of competency specifies the outcomes required to use commonly used hand and power tools in plumbing work applications.

Application of the Unit

Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Identify hand and power tools.	1.1	***Work health and safety*** (WHS) and ***environmental requirements*** associated with the use of plumbing hand and power tools are adhered to throughout the work.
		1.2	***Quality assurance requirements*** for company operations are identified and adhered to.
		1.3	Types of hand and power tools and their functions are identified.
		1.4	Power sources and access to power supply are identified.
2	Select appropriate hand tools.	2.1	Appropriate personal protective equipment is selected, fitted and used.
		2.2	***Hand tools*** are selected consistent with the needs of the job.
		2.3	Hand tools are checked for serviceability and safety and any faults reported to supervisor according to workplace requirements.
		2.4	Equipment is selected to secure, position or support material for hand tools application.
3	Use appropriate hand tools.	3.1	Material is located and secured in position for hand tool application.
		3.2	Hand tools are safely and effectively used according to their intended use.
		3.3	Hand tools are safely located when not in immediate

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			use.
4	Select appropriate power tools.	4.1	Appropriate personal protective equipment is selected, correctly fitted and used.
		4.2	***Power tools*** are selected consistent with the needs of the job according to conventional work practice.
		4.3	Power tools are visually checked for tags, serviceability and safety according to WHS requirements and any faults are reported to supervisor according to enterprise procedures.
		4.4	Equipment is selected to secure, position or support materials for power tool application.
5	Use appropriate power tools.	5.1	Material is located and secured in position for power tool application.
		5.2	Power tools are safely and effectively used in application processes.
		5.3	Power tools are safely located when not in use.
		5.4	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
6	Clean up work area	6.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulation, codes of practice and job specification.
		6.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		6.3	***Information*** is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - report faults and follow instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to:
  - identify and report to appropriate personnel any faults in tools, equipment or materials
  - identify, correctly apply and effectively operate tools
- literacy skills to:
  - complete workplace documentation
  - read and interpret documentation from a variety of sources
- planning and organising skills to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- function and purpose of hand and power tools used in plumbing applications
- job safety analysis (JSA) and safe work method statements (SWMS)
- workplace safety requirements and WHS legislation

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- demonstrating compliance with WHS regulations applicable to workplace operations
- adopting and carrying out correct procedures prior to, during and after use of hand and power tools
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- safely operating ten different hand tools and five different power tools for their appropriate application
- carrying out the above work, ensuring:
  - there is no damage to materials, tools or equipment
  - all work is completed to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others
  - application of sustainability principles and concepts.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or

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Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken

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at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control, including of electrical hazards
- hazardous materials and substances
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- use of firefighting equipment
- use of first aid equipment
- use of tools and equipment
- workplace environment and safety.

Environmental requirements may include:

- air pollution precautions
- clean-up protection
- noise pollution precautions
- water course protection
- waste management.

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Quality assurance requirements may include:

- Australian standards
- Environment Protection Authority (EPA)
- environmental policy
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- manufacturer requirements
- site safety plans
- workplace operations and procedures.

Appropriate plumbing ***hand tools*** may include:

- caulking guns
- copper tube cutters
- copper tube expanders
- customised tools to meet manufacturer specifications
- files and rasps
- hacksaws
- ladders
- other specialist tools for water services
- oxy-acetylene
- pipe benders
- pipe dies
- pipe wrenches
- pop riveters
- screwdrivers
- spirit levels
- squares
- tin snips
- tube benders
- tube flaring tools
- wood saws.

Appropriate plumbing ***power tools*** may include:

- compactor (wacker)
- compressed air tools
- drop saw
- electric dies (up to 100mm)
- electric drills
- electric nibbler
- generator

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- grinder
- hydraulic tools and equipment
- large rotary drills
- petrol diamond saws
- power saws.

Sustainability principles and concepts:

- cover the social, economic and environmental use of resources to meet current and future needs
- may include:
  - selecting appropriate tools and equipment
  - efficient use and recycling of tools and equipment
  - disposing of waste material to ensure minimal environmental impact
  - energy efficiency
  - water efficiency.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- relevant Australian standards
- safe work procedures relating to operating hand and power tools, and disposing of waste
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

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Custom Content Section

Not applicable.

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CPCPCM2047A Carry out levelling

Modification History

Prerequisite unit updated
Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPCM2027A

Unit Descriptor

This unit of competency specifies the outcomes required to plan and use levelling equipment to establish, record and apply those levels to the plumbing and services industry.

Application of the Unit

This unit of competency supports skills to undertake levelling operations for application in the plumbing and services industry.
Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills..

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Requirements of the job are determined and various levels are obtained.
		1.2	***Work health and safety*** (WHS) and environmental requirements associated with levelling activities are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
2	Perform levelling.	2.1	Height to be transferred is identified from drawings, plans or instructions.
		2.2	***Levelling equipment*** is set up and operated according to manufacturer instructions, workplace procedures and relevant Australian standards.
		2.3	Levels are taken, recorded and marked according to job requirements and workplace procedures within the required tolerance and specifications.
		2.4	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
3	Clean up.	3.1	Work area is cleared and materials are disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		3.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations

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and workplace procedures.

3.3 ***Information*** is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - determine requirements, follow instructions and access information
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - plans and specifications
    - documentation from a variety of sources
- numeracy skills to apply measurements and calculations
- planning and organising skills to plan and set out work
- technical skills to operate levelling equipment to read, record, establish and check:
  - levels: horizontal, vertical and at gradient used for the placement of plumbing and services
  - recording levels at specific points along a set out
  - recording and checking levels in drainage and sanitary excavations and plumbing services
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- different types of levelling equipment, their applications and their method of operation
- how to access relevant information, including codes and technical standards
- job safety analysis (JSA) and safe work method statements (SWMS)
- process of establishing, recording and checking levels and alignment
- relevant statutory requirements related to establishing, recording and checking levels

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- simple calculations relating to carrying out levelling
- SI system of measurements
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications for the establishment, recording and checking of levels
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- using either a pipe laser, rotary laser or automatic level and either boning rods or string line
- grading a pipe (or equivalent) over 10 metres on a grade to a tolerance of + or - 5mm, ensuring:
  - applying sustainability principles and concepts
  - correctly identifying, recording and checking level
  - correctly selecting and using appropriate processes, tools and equipment
  - completing all work to specification
  - complying with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

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- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of

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the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control, including of electrical hazards
- hazardous materials and substances
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- use of firefighting equipment
- use of first aid equipment
- use of tools and equipment
- workplace environment and safety.

Quality assurance requirements may include:

- environmental policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- relevant Australian standards
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:

- hand tools
- measuring equipment
- string line.

Levelling equipment may include:

- boning rods
- rotating laser level

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- pipe laser level
- spirit level
- water level.

Sustainability principles and concepts:

- cover the social, economic and environmental use of resources to meet current and future needs
- may include:
  - efficient use and recycling of tools and equipment
  - disposing of waste material to ensure minimal environmental impact
  - energy efficiency
  - water efficiency.

Information may include:

- building codes
- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- WHS and environmental requirements
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to plumbing and gasfitting authority regulations
- relevant Australian standards
- safe work procedures relating to handling and storing levelling equipment
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Functional area

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Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPCM2048A Cut and join sheet metal

Modification History

Prerequisite unit updated
Changes to performance criteria, required skills, range statement and critical aspects
Not equivalent to CPCPCM2028A

Unit Descriptor

This unit of competency specifies the outcomes required to cut and join sheet metal associated with the fabrication, installation and repair functions of the plumbing sector.

Application of the Unit

This unit of competency supports metal fabrication work used in plumbing applications.
Site location for work application may be either domestic or commercial and may be a new work site or an existing structure or fitting being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans, drawings and specifications are obtained from supervisor for planned work activity.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with cutting and joining sheet metal are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient cutting and joining of sheet metal.
2	Identify joining requirements.	2.1	Selected sheet metal is checked for compliance with plans and specifications.
		2.2	Joining ***materials*** are selected to comply with plans and specifications.
		2.3	Sealants, fixing materials and sheet metal materials are checked for compatibility and are appropriate for the job.

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3	Cut and join sheet metal.	3.1	Sheet metal is marked out according to plans and specifications.
		3.2	Sheet metal is cut to pattern using appropriate cutting tool.
		3.3	Laps are measured and shaped for joining using appropriate tools and equipment according to plans and specifications.
		3.4	Surface is prepared and cleaned of grease and other contaminants.
		3.5	Sheet metal is joined to comply with plans and specifications, avoiding damage to surrounding surfaces.
		3.6	***Joins*** are cleaned and visually inspected ensuring materials are correctly aligned, joined and sealed.
		3.7	***Sustainability principles and concepts*** are applied throughout the cutting and joining process.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	Information is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to:
  - cut and join sheet metal in the fabrication of plumbing components and select suitable joins and sealants for the application and material
  - identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- appropriateness of different fastening methods for different applications
- capillary action, thermal expansion and fabrication techniques to prevent leaking installations
- characteristics of various metal materials and their compatibility with different joining

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methods

- electrolysis and problems associated with the use of dissimilar metals
- job safety analysis (JSA) and safe work method statements (SWMS)
- organisational quality procedures and processes within the context of cutting and joining of sheet metal
- SI system of measurement
- workplace and equipment safety requirements, including relevant statutory regulations, codes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, standards and specifications for cutting and joining sheet metal
- apply safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications:
  - cut and join items of sheet metal demonstrating a range of commonly used joining techniques and the use of approved sealants
  - plan the layout, fabricate and assemble a sheet metal product incorporating at least three joining techniques, ensuring:
    - application of sustainability principles and concepts
    - correct identification of requirements and details of proposed joins and assemblies
    - correct selection and use of appropriate processes, tools and equipment
    - completion of all work to specification
    - compliance with regulations, relevant Australian standards and organisational quality procedures and processes
    - communicating and working effectively and safely with others.

Context of and specific resources

This competency is to be assessed using standard and

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for assessment

authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and

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the practical requirements of the workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control, including of electrical hazards
- hazardous materials and substances
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- use of firefighting equipment
- use of first aid equipment
- use of tools and equipment
- workplace environment and safety.

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Environmental requirements may include:

- clean-up protection
- waste management.

Quality assurance requirements may include:

- Australian standards
- environmental policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:

- guillotines
- hand and power tools
- measuring equipment
- other special joining tools and machines
- soldering equipment
- tin snips.

Materials may include:

- rivets
- self-drilling and tapping fasteners
- sheet metal, including:
  - colour coated
  - copper
  - galvanised
  - zincalume
  - aluminium
  - lead
  - zinc
- silicon and other sealants.

Types of ***joins*** may include:

- grooved seam
- knock up
- lap
- Pittsburgh lock
- resistance (spot) weld
- riveted and screwed
- solder.

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Sustainability principles and concepts:

- cover the social, economic and environmental use of resources to meet current and future needs
- may include:
  - selecting appropriate components and material
  - choosing efficient products
  - using material efficiently.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPCM2049A Cut using oxy-LPG-acetylene equipment

Modification History

Prerequisite unit updated
Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPCM2029A

Unit Descriptor

This unit of competency specifies the outcomes required to use oxy-LPG-acetylene equipment to carry out basic cutting of mild steel in support of plumbing applications and fabrication to meet job specifications.

Application of the Unit

This unit of competency supports skills for specific plumbing oxy-LPG-acetylene cutting activities but does not cover specialist cutting and welding skills.
Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Job drawings and specifications are obtained from job supervisor and job requirements are adhered to.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with cutting with oxy-LPG-acetylene are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	***Tools and equipment***, including personal protective equipment (PPE), are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient cutting with oxy-LPG-acetylene.
2	Identify cutting requirements.	2.1	Cutting requirements are identified from plans and specifications.
		2.2	Safety precautions are undertaken prior to cutting in compliance with the job specification and standards.
3	Perform cuts and inspect.	3.1	Oxy-LPG-acetylene cutting equipment is set up according to manufacturer guidelines.
		3.2	Tip size is selected as appropriate for the materials to be cut.

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		3.3	Cutting pressures are adjusted to manufacturer recommendations for the materials to be cut.
		3.4	***Materials*** are prepared for cutting according to plans and specification and ***sustainability principles and concepts***.
		3.5	Materials are marked out and clamped prior to cutting.
		3.6	Flame is set and cuts are performed according to the specified cutting procedures to effect a clean cut.
		3.7	Completed cuts are visually inspected for compliance with job specifications, and defects are repaired using appropriate techniques.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulation, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	Information is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to:
  - identify and report to appropriate personnel any faults in tools, equipment or materials
  - mark out and accurately cut mild steel up to 8mm thick and mild steel pipe up to 100mm diameter without manual force
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - plans and specifications
    - documentation from a variety of sources
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- dangers of high pressure settings with oxy-LPG-acetylene equipment
- job safety analysis (JSA) and safe work method statements (SWMS)
- operating principles of oxy-LPG-acetylene equipment
- organisational quality procedures and processes within the context of oxy cutting

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- potential fumes and health and safety risks from high temperatures on materials
- properties of materials and the effect of heat on the properties of metal
- relevant WHS regulations and PPE requirements
- SI system of measurement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to cutting with oxy-LPG-acetylene
- applying safety requirements throughout the work sequence, including the use of PPE
- given the plans and specifications, marking out and cutting the following items of plumbing material:
  - using hand-held oxy-LPG-acetylene cutting equipment, cut 150mm x 150mm sheet of mild steel sheet (up to 8mm thick) into three equal pieces
  - using hand-held oxy-LPG-acetylene cutting equipment cut up to 8mm mild steel disc to fit a DN40 to DN100 diameter mild steel pipe
  - using hand-held oxy-LPG-acetylene cutting equipment, cut three holes to suit up to DN50 branch pipes into a length of up to DN100 diameter mild steel pipe
- marking out and cutting should ensure:
  - application of sustainability principles and concepts
  - a clean cut and fit of the materials
  - correct identification of requirements and details of proposed cuts
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes

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- communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and

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environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- hazardous materials and substances
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity

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- pressurised and inflammable gases
- surrounding structure and facilities
- trip hazards
- work site visitors and the public
- working at heights
- working in confined spaces
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Environmental requirements cover:

- clean-up protection
- waste management.

Quality assurance requirements may include:

- Australian standards
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:

- grinders and clamps
- hand and power tools
- measuring equipment
- oxy cutting equipment.

Materials may include:

- LPG
- acetylene gases
- oxygen
- mild steel pipe (up to DN100)
- mild steel sheet (up to 8mm thick).

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - selecting appropriate material to ensure minimal environmental impact

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- efficient use and selection of materials
- recycling materials.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPCM2050A Mark out materials

Modification History

Prerequisite unit updated
Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPCM2030A

Unit Descriptor

This unit of competency specifies the outcomes required to mark out plumbing materials prior to fabricating piping, steel sections, ducting and sheet materials, roofing and cladding.

Application of the Unit

Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications are obtained from job supervisor and job requirements are determined.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with marking out of materials are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	***Tools and equipment***, including personal protective equipment (PPE), are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient marking out of materials.
2	Determine job requirements.	2.1	Selected materials are checked for compliance with plans and specifications.
		2.2	Quantity and type of material required are calculated from plans and specifications.
		2.3	Job requirements and ***development methods*** are determined from plans and specifications.

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3	Mark out job.	3.1	Dimensions for fabrication and assembly are determined and transferred.
		3.2	Relevant standards, codes and symbols are interpreted.
		3.3	Selected development method is applied as appropriate and according to workplace procedures and ***sustainability principles and concepts***.
		3.4	Calculations are performed to specified job requirements.
		3.5	***Material*** is marked out in compliance with specified measurements.
		3.6	Dimensions are checked for accuracy and compliance with plans and specifications.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulation, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	Information is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to:
  - identify and report to appropriate personnel any faults in tools, equipment or materials
  - mark out plumbing materials according to plans and specifications for the fabrication of plumbing components and applications
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - plans and specifications
    - documentation from a variety of sources
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- identification and correct use of measuring and marking out equipment
- impact of accurate marking out on fabrication process, work time and finished work quality
- job safety analysis (JSA) and safe work method statements (SWMS)

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- operation requirements of equipment used for measuring and calculating
- processes of marking out plumbing materials
- relevant WHS regulations and PPE requirements
- SI system of measurement
- sources of information on characteristics and applications of materials being marked out
- workplace operating procedures, including required standards for marking out

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- giving instructions
- locating, interpreting and applying relevant information, standards and specifications to marking out materials
- applying safety requirements throughout the work sequence, including the use of PPE
- given the plans and specifications and using any of the three development methods, marking out and measuring the following items of plumbing material:
  - roofing sheets
  - copper tubing
  - polymer pipe
  - steel pressure pipe
  - and one of the following:
    - a square and a round penetration in a roofing sheet

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    - sheet metal square to round ducting transition
    - develop a sheet metal cone
    - develop a piece of duct work using parallel line method
- all the above carried out, ensuring:
    - application of sustainability principles and concepts
    - correct identification of requirements and details of proposed markings
    - correct selection and use of appropriate processes, tools and equipment
    - completing all work to specification
    - compliance with regulations, standards and organisational quality procedures and processes
    - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of

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appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- hazardous materials and substances
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - dangerous materials
  - surrounding structure and facilities
  - trip hazards
  - work site visitors and the public
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- use of tools and equipment
- workplace environment and safety.

Environmental requirements cover:

- clean-up protection
- waste management.

Quality assurance requirements may include:

- Australian standards
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:

- adjustable bevels
- dividers
- protractors
- rulers

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- scribers
- squares
- tape measures.

Development methods may be:

- parallel line development
- radial line development
- triangulation.

Sustainability principles and concepts:

- cover the social, economic and environmental use of resources to meet current and future needs
- may include:
  - selecting appropriate material to ensure minimal environmental impact
  - efficient use and selection of materials.

Materials may include:

- cladding and timber
- insulating materials for roofing, piping and ducting
- piping (metal and non-metallic)
- roof sheeting (metal, fibreglass and plastic)
- sheet metal
- steel sections.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPCM2052A Weld using oxy-acetylene equipment

Modification History

Prerequisite unit updated
Changes to performance criteria, required skills, range statement and critical aspects
Not equivalent to CPCPCM2032A

Unit Descriptor

This unit of competency specifies the outcomes required to weld/braze metals associated with the fabrication, installation and repair of plumbing components and systems, using oxy-acetylene equipment.

Application of the Unit

This unit of competency supports the development of oxy-acetylene welding skills used in plumbing work but not specialist welding skills used in other occupations.
Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications are obtained from job supervisor.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with oxy-acetylene welding tasks are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	Personal protective equipment applicable to oxy-acetylene welding is selected and checked for serviceability.
		1.6	Work area is prepared to support efficient welding with oxy-acetylene equipment.
		1.7	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
2	Prepare materials and welding equipment.	2.1	Weld requirements are identified from plans and specifications or given information.
		2.2	***Materials*** to be welded are identified and selected according to workplace procedures.
		2.3	Material is cleaned and prepared using appropriate tools and techniques according to workplace procedures.
		2.4	Welding equipment, including cylinders and regulators, are assembled and set up according to workplace

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			procedures.
		2.5	Welding tips, settings and consumables are selected to meet job requirements and welding procedures according to workplace procedures.
3	Perform welding.	3.1	Materials are welded to job requirements using safe welding practices.
		3.2	Appropriate action is taken to report or remedy defects in materials or welding equipment, including adjustments to settings and welding technique.
		3.3	Welds are cleaned according to workplace requirements.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulation, codes of practice and job specification.
		4.2	***Tools and equipment*** are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	Information is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to weld mild steel plate, non-ferrous materials and pipe by oxy-acetylene welding
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- dangers associated with oxy-acetylene welding in the fabrication and installation of plumbing systems
- effect of heat on the properties and shape of welded metals
- job safety analysis (JSA) and safe work method statements (SWMS)
- operating principles of oxy-acetylene welding equipment

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- organisational quality procedures and processes within the context of oxy-acetylene welding
- SI system of measurement
- workplace and equipment safety requirements, including relevant statutory regulations, codes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications for oxy-acetylene welding
- applying safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- given the plans and specifications, welding two of the following:
  - a flat butt weld up to 6mm mild steel plate, 150mm long
  - a vertical butt weld up to 6mm mild steel plate, 150mm long
  - a rotated butt weld around up to DN100 mild steel pipe located in a horizontal position and rotated during welding
  - silver braze fabricated non-ferrous pipes, fittings and components
- welding should ensure:
  - application of sustainability principles and concepts
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

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Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a

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period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control and hazardous materials and substances
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - pressurised and inflammable gases
  - surrounding structure and facilities

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- trip hazards
- work site visitors and the public
- working at heights
- working in confined spaces
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- use of tools and equipment
- workplace environment and safety.

Environmental requirements may include:

- clean-up protection
- waste management.

Quality assurance requirements may include:

- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Sustainability principles and concepts:

- cover the social, economic and environmental use of resources to meet current and future needs
- may include:
  - selecting appropriate material to ensure minimal environmental impact
  - efficient use of materials
  - recycling material.

Materials may include:

- copper (Cu)
- copper alloy
- low carbon mild steel (plate and pipe)
- oxy-LPG-acetylene.

Tools and equipment may include:

- clamps
- hand and power tools
- jigs
- measuring equipment
- oxy-acetylene welding equipment.

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Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPCM2053A Weld using manual metal arc welding equipment

Modification History

Prerequisite unit updated
Changes to unit title, performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPCM2033A

Unit Descriptor

This unit of competency specifies the outcomes required to weld metals associated with the fabrication and installation of plumbing components, using manual metal arc welding equipment.

Application of the Unit

This unit of competency supports development of arc welding skills used in plumbing work, but not specialist welding skills used in other occupations. It has particular application to mechanical services but may be applied in all plumbing streams.
Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications are obtained from job supervisor.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with manual metal arc welding tasks are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient performance of arc welding.
		1.7	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
2	Identify welding requirements.	2.1	Welding requirements are identified from plans and specifications or given ***information***.
		2.2	Materials to be welded are identified and selected according to workplace procedures.
		2.3	Location of welds is identified according to workplace procedures and job specifications.

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3	Prepare materials and equipment for welding.	3.1	***Materials*** are cleaned and prepared for welding.
		3.2	Tools and techniques appropriate to the preparation of materials to be welded are identified.
		3.3	Welding equipment is set up and correct electrodes are selected according to workplace procedures and job specifications.
4	Weld items.	4.1	Materials are welded according to plans and specifications and job requirements using safe welding practices.
		4.2	Appropriate action is taken to report faults or remedy defects in materials or welding equipment, including adjustments to settings, electrodes and welding technique.
5	Clean up	5.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulation, codes of practice and job specification.
		5.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		5.3	Information is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - plans and specifications
    - documentation from a variety of sources
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to weld mild steel plates by manual metal arc welding
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- dangers associated with manual metal arc welding plumbing components
- effect of heat on the properties and shape of welded metals
- job safety analysis (JSA) and safe work method statements (SWMS)
- operating principles of manual metal arc welding equipment
- organisational quality procedures and processes within the context of manual metal arc welding

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- SI system of measurement
- workplace and equipment safety requirements, including relevant statutory regulations, codes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications for manual metal arc welding
- applying safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- given the plans and specifications and using manual metal arc welding equipment:
  - weld butt joint in mild steel plate up to 8mm, 150mm long
  - fillet weld mild steel plate up to 8mm, 150mm long
  - pad weld mild steel plate up to 8mm, 150mm long
- welding should ensure:
  - application of sustainability principles and concepts
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

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Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

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Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control and hazardous materials and substances
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with the use of welding systems, including:
  - dangerous materials
  - electricity
  - hot metals
  - surrounding structure and facilities
  - trip hazards
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- use of tools and equipment
- workplace environment and safety.

Environmental requirements may

- clean-up protection
- waste management.

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include:

Quality assurance requirements may include:

- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:

- hand and power tools
- manual metal arc welding equipment
- measuring equipment.

Sustainability principles and concepts:

- cover the social, economic and environmental use of resources to meet current and future needs
- may include:
  - selecting appropriate material to ensure minimal environmental impact
  - efficient use and selection of materials
  - recycling of material.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - plumbing regulations
  - building codes
  - WHS and environmental requirements
- relevant Australian standards
- safe work procedures relating to manual metal arc welding
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

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Materials may include:

- electrodes.
- mild steel plates.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPCM2054A Carry out simple concreting and rendering

Modification History

Prerequisite unit updated
Changes to performance criteria, required skills, range statement and critical aspects
Not equivalent to CPCPCM2034A

Unit Descriptor

This unit of competency specifies the outcomes required to perform minor repairs and undertake minor concreting and rendering tasks.

Application of the Unit

This unit of competency supports development of basic concreting skills needed for plumbing applications.
Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Job requirements are determined and various levels are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with levelling activities are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
		1.5	***Sustainability principles and concepts*** are applied.
2	Place concrete.	2.1	Concrete mixture is prepared to meet job and manufacturer requirements.
		2.2	Formwork or excavation area is cleaned of excess material and debris prior to concrete placement.
		2.3	Concrete is safely transported by an approved method.
		2.4	Concrete is placed in formwork or placement site to specified depth ensuring all cavities are filled.
		2.5	Concrete is screeded to the alignment of formwork and project specified datums.
		2.6	Surface of concrete is finished according to specifications.

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3	Place rendering.	3.1	Render mixture is prepared to meet manufacturer requirements.
		3.2	Render is safely transported by an approved method.
		3.3	Render is applied in the required location.
		3.4	Surface of render is finished according to specifications.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulation, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	***Information*** is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - report hazards
  - use and interpret non-verbal communication, such as hand signals
  - use language and concepts appropriate to cultural differences
- initiative and enterprise skills to:
  - contribute to workplace responsibilities, such as current work site environmental or sustainability frameworks, or management systems
  - evaluate own actions and make judgements about performance and necessary improvements
  - identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to complete workplace documentation
- planning and organising skills to plan and set out work
- self-management skills to:
  - recognise procedures
  - respond to change
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- basic levelling techniques
- categories of materials and their safe handling, storage and transport requirements
- concrete and plastering materials
- concreting and plastering techniques
- job safety analysis (JSA) and safe work method statements (SWMS)
- material safety data sheets (MSDS)
- WHS and environmental legislation and requirements
- plans, drawings and specifications

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- processes for the calculation of material requirements
- simple formwork and reinforcing componentry
- types of waste and their disposal, including an awareness only of the requirements for asbestos handling and disposal
- workplace safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications as required to carry out concreting and rendering to a simple form
- applying safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- given the plans and specifications, carrying out one of the following:
  - bench an access chamber
  - install thrust blocks
  - pipe penetration through a floor or wall
  - place concrete as required within AS/NZS3500 National plumbing and drainage: Part 1.2 Water supply – Acceptable solutions
  - pour a concrete slab up to 600mm square
  - repair concrete up to 600mm square
  - repair pipe chases in a brick wall
- all activities carried out should ensure:
  - application of sustainability principles and concepts
  - correct identification of location, design and details of proposed tasks
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to plans and specification
  - compliance with regulations, standards and organisational quality procedures and processes

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- communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and

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environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- electrical safety
- handling of materials
- hazard control
- hazardous materials and substances
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- use of firefighting equipment

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- use of first aid equipment
- use of tools and equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Quality assurance requirements may include:

- Australian standards
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- National Construction Code (NCC)
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:

- brooms
- bull floats
- edging tools
- hand floats (steel and wood)
- levels
- shovels
- stipple devices
- trowels
- wheel barrows.

Sustainability principles and concepts:

- cover the social, economic and environmental use of resources to meet current and future needs
- may include:
  - appropriate material selection to ensure minimal environmental impact
  - efficient use of materials
  - recycling of material
  - minimal water wastage.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel

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- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing and/or gasfitting authority regulations
- relevant Australian standards
- safe work procedures relating to handling and storing plumbing materials, including the disposal of waste
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPCM2055A Work safely on roofs

Modification History

Prerequisite unit updated
Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPCM2035A

Unit Descriptor

This unit of competency specifies the outcomes required to perform safe work practices when undertaking plumbing work on roofing structures.

Application of the Unit

Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills..

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Identify work safety requirements.	1.1	Scope of task and proposed work practices and activities are identified and documented according to workplace procedures, ***statutory and regulatory authorities'*** requirements and relevant ***information***.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with working safely on roofs are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Site is inspected to determine layout and physical condition, condition of structure, prevailing weather conditions, equipment requirements and potential hazards.
		1.5	Safety equipment is identified, selected and checked for serviceability according to workplace requirements.
		1.6	Certification of suitability of structure to support the safety system is obtained.
2	Prepare for work.	2.1	Work procedures and instructions for the task are identified.
		2.2	Materials, ***tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
		2.3	Fall protection and perimeter protection equipment is inspected and installed, ensuring adequacy for work and conformance to regulatory requirements.

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		2.4	***Roof safety system*** is installed according to workplace and regulatory requirements.
		2.5	Appropriate signage and barricades are selected and installed.
3	Perform work on roof.	3.1	Access from ground to work area is checked to ensure it is safe and according to regulatory requirements.
		3.2	Fall protection and personal safety requirements are applied according to regulatory requirements.
		3.3	Manual handling of materials and equipment is undertaken according to regulatory requirements.
		3.4	Roof materials and equipment are located on roof, ensuring that they are safely secured and distributed to eliminate risk of distorting or collapsing the building framework.
		3.5	Safety system is checked periodically for compliance with regulations according to workplace procedures, and ***faults are reported***.
		3.6	Risk control measures are monitored to ensure that they are effective and appropriate to the task and work environment.
		3.7	Risk control measures are reassessed, as required, according to changed work practices and/or site conditions, and alterations are undertaken within scope of authority.
		3.8	***Sustainability principles and concepts*** are applied throughout the work process.
4	Clean up.	4.1	Safety system is dismantled according to sequence and removed from work site.
		4.2	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.3	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.

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4.4 Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to:
- conduct a safety assessment of a roof work site
- identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete written workplace documentation
  - document scope of work and work practices
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to plan and set out work
- technical skills to provide necessary safety measures, including the installation of a roof safety system
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- job safety analysis (JSA) and safe work method statements (SWMS)
- nature of work undertaken on roofs
- processes of providing for safe work practices
- relevant statutory and regulatory authorities' requirements related to working safely on roofs

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- risks associated with photovoltaic (solar) panels and systems
- roof safety equipment and systems and considerations to facilitate working safely on roofs
- SI system of measurement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications for working safely on roofs
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications for the roof working area of a corner, extending at least 4 metres in either direction and greater than 1.8m high, provide for erection, maintenance and dismantling of the fall and perimeter protection requirements for the site, incorporating handrails and footwalk or harnesses and harness fixing points for safe personal and stores access to the roof, stores and equipment locations; and risk assessment, ensuring:
    - application of sustainability principles and concepts
    - correct identification of risks and safety requirements
    - correct selection and use of appropriate processes, tools and equipment
    - completion of all work to specification
    - compliance with regulations, standards and organisational quality procedures and processes
    - communicating and working effectively and safely with others.

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Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.
- Validity and sufficiency of evidence requires that:
- competency will need to be demonstrated over a

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period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Guidance information for assessment

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- material safety data sheets (MSDS)
- memos

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- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
- building codes
- WHS and environmental requirements
- plumbing regulations
- relevant Australian standards
- safe work procedures relating to working on roofs
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control, including of electrical hazards
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - hazardous materials and substances
  - photovoltaic (solar) panels
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of tools and equipment
  - work site visitors and the public
  - working at heights
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements may include:

- clean-up protection
- ozone protection
- waste management.

Quality assurance requirements may include:

- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk

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management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Tools and equipment include:

- fall protection
- ladders
- lifting and load shifting equipment, including:
  - chain blocks
  - cranes
  - elevated work platforms
  - forklifts
  - hand trolleys
  - hoists and jacks
  - rollers
  - scaffolds
- perimeter protection
- signage and barricades.

Roof safety systems include:

- footwalks
- handrails
- harness fixing points
- kickboards
- safety harness
- scaffolds.

Fault reporting include:

- may be written or verbal
- is to be according to company's workplace procedures.

Sustainability principles and concepts:

- cover the social, economic and environmental use of resources to meet current and future needs
- may include:
  - selecting appropriate components and material
  - choosing efficient products
  - using material efficiently.

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Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPCM3021A Flash penetrations through roofs and walls

Modification History

Prerequisite unit updated
Changes to descriptor, performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPCM3011A

Unit Descriptor

This unit of competency specifies the outcomes required to set out, cut and flash a roof and wall penetration.

Application of the Unit

Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications are obtained from job supervisor and site inspection.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with the flashing of penetrations through roofs and walls are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient flashing of penetrations through roofs and walls.
		1.7	***Sustainability principles and concepts*** are applied throughout the installation process.
2	Identify flashing requirements.	2.1	Roof and wall penetrations are identified from plans and specifications.
		2.2	Penetrations are assessed to allow for the location of existing and future services.
		2.3	***Material*** requirements are calculated from the job specification, in compliance with standards.
		2.4	Materials are identified, ordered and collected according to workplace procedures.

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		2.5	Materials and equipment are checked for compliance with docket and order form, and for acceptable condition.
3	Flash penetrations.	3.1	Fabrication is undertaken according to plans and specifications.
		3.2	Penetration is positioned and cut in compliance with plans, specifications and site measurements.
		3.3	Structural supports are installed according to plans, specifications and the building code.
		3.4	Opening is prepared in compliance with plans and specifications, manufacturer recommendations and regulations.
		3.5	Proprietary or purpose-made flashing is fitted according to standards, plans, specifications and regulations.
		3.6	Where required, sealant is applied in compliance with specifications and manufacturer recommendations.
		3.7	Penetration is performance tested to ensure correct fit of completed installation, and remedied as required.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulation, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	***Information*** is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - plans and specifications
    - documentation from a variety of sources
  - record material quantities
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- capillary action, thermal expansion and fabrication techniques to prevent leaking installations
- characteristics of various roofing and wall cladding materials and their compatibility with different joining methods
- corrosion prevention treatment requirements of cut sheets
- electrolysis and problems associated with the use of dissimilar metals

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- job safety analysis (JSA) and safe work method statements (SWMS)
- processes of flashing roof and wall penetrations
- relevant WHS regulations and fall protection codes and requirements
- relevant statutory requirements related to the flashing of roof and wall penetrations
- SI system of measurement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to the flashing of penetrations through roofs and walls
- applying safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- given the plans and specifications, set out, cut and flash penetrations through openings within a range of up to 300mm diameter and up to 300mm square, one through a roof and one through a wall, ensuring:
  - application of sustainability principles and concepts
  - correct identification of requirements and details of the proposed penetration
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

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Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further

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learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- hazardous materials and substances
- protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - dangerous materials
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of drilling and cutting tools
  - work site visitors and the public
  - working at heights
  - working in proximity to others

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- use of firefighting equipment
- use of first aid equipment
- use of tools and equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Quality assurance requirements may include:

- Australian standards
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- National Construction Code
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:

- fall protection equipment
- hand and power tools
- ladders
- measuring equipment
- lifting and load shifting equipment, including:
  - chain blocks
  - cranes
  - elevated work platforms
  - forklifts
  - hand trolleys
  - hoists
  - jacks
  - restricted height scaffolds
  - rollers.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - appropriate material selection to ensure minimal environmental impact
  - rainwater harvesting

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- choice of efficient products
- efficient use of material
- recycling of material.

Materials used for flashing roof penetrations may include approved materials, such as:

- fibreglass
- laminate
- metal roof covers of concealed or pierce fixed types
- plastic building sheets for walls and roofs
- polyethylene
- rainwater goods
- thermal insulation of reflective foil
- fixings, which may include:
  - metal self drilling and tapping screws
  - rivets
  - sealants (approved silicone and solder)
  - or other approved materials.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to the flashing of roof penetrations
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

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Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPCM3022A Weld polyethylene and polypropylene pipes using fusion method

Modification History

Prerequisite unit updated
Changes to unit title, descriptor, application, performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPCM3012A

Unit Descriptor

This unit of competency specifies the outcomes required to fusion weld polyethylene (PE) and polypropylene (PP) (approved as per Australian standards) polymer pipes, and test joints in polymer pipe up to DN100 for water, sanitary and stormwater application only.

Application of the Unit

This unit of competency supports development of skills for polymer pipe welding using a variety of fusion techniques.
Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications are obtained from job supervisor and job requirements.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with the fusion welding of polymer pipes are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	Materials, welding parameters and techniques are identified as required.
		1.6	***Tools, equipment*** and ***materials*** for the fusion welding of approved polymer pipes, including personal protective equipment (PPE), are selected and checked for serviceability.
		1.7	Work area is prepared to support efficient fusion welding of approved polymer pipes.
		1.8	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
2	Identify welding requirements.	2.1	***Welding requirements*** are identified from plans and specifications or given information.
		2.2	Welding equipment is assembled and checked for correct operation according to manufacturer instructions.

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3	Weld and pressure test pipes.	3.1	Joints are prepared using tools and techniques according to standards and manufacturer specifications.
		3.2	Test welds are undertaken and verified according to job specifications.
		3.3	Fusion welds are carried out according to standards, plans, and job and manufacturer specifications.
		3.4	Fusion welds are visually inspected for compliance with standards and manufacturer specifications.
		3.5	Pipe joints are pressure tested and inspected according to standards and job specifications.
		3.6	Test details and monitored results are checked for accuracy and documented according to requirements of regulatory authority and plans and specifications.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturers' recommendations and workplace procedures.
		4.3	***Information*** is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - plans and specifications
    - documentation from a variety of sources
  - record material quantities
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
  - prepare surfaces in line with the material selected and the chosen weld technique
  - fusion welding, visual inspection and testing joints in approved polymer pipes up to DN100
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- dangers associated with fusion welding of polymer pipe

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- effect of heat on the properties of polymer pipe
- job safety analysis (JSA) and safe work method statements (SWMS)
- operating principles of fusion welding equipment
- organisational quality procedures and processes within the context of fusion welding of polymer pipe
- relevant WHS regulations and PPE requirements
- SI system of measurement
- surface preparation in the welding process

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to perform fusion welding of approved polymer pipes
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, butt fusion welding two joints and electro-fusion weld one socket joint up to DN100 on approved polymer pipes, using appropriate fusion welding processes and a visual inspection to manufacturer recommendations or other approved methods, ensuring:
    - application of sustainability principles and concepts
    - correct identification of requirements and details of proposed cuts
    - correct selection and use of appropriate processes, tools and equipment
    - completing all work to specification
    - compliance with regulations, standards and organisational quality procedures and processes
    - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and

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environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace

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- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- hazardous materials and substances
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - dangerous materials
  - electricity
  - surrounding structure and facilities
  - trip hazards
  - use of polymer pipe welding equipment

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- work site visitors and the public
- working in confined spaces
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- use of tools and equipment
- workplace environment and safety.

Environmental requirements cover:

- air pollution precautions
- clean-up protection
- waste management.

Quality assurance requirements may include:

- Environment Protection Authority (EPA)
- environmental policy
- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice
- industry guidelines
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- statutory requirements
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:

- approved polymer welding equipment
- approved surface preparation equipment and material
- hand and power tools
- measuring equipment.

Materials **may include:**

- polyethylene
- polypropylene
- polybutylene.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - appropriate material selection to ensure minimal

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environmental impact
- efficient use and recycling of material
- efficient energy usage
- disposing of waste material to ensure minimal environmental impact.

Welding requirements may include:
- identifying pipe diameters
- identifying welding machine type and operating data
- materials and pipes supplied being compatible for welding from specifications
- preparation according to pipe manufacturer specifications
- welding temperature, welding time and cooling time according to manufacturer specifications.

Information may include:
- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
- WHS and environmental requirements
- plumbing regulations
- relevant Australian standards
- safe work procedures relating to the fusion welding of approved polymer pipes
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

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Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPCM3023A Fabricate and install non-ferrous pressure piping

Modification History

Prerequisite unit updated
Changes to application, performance criteria, required skills, range statement and critical aspects
Not equivalent to CPCPCM3013A

Unit Descriptor

This unit of competency specifies the outcomes required to determine installation requirements and to fabricate, install and test non-ferrous pressure pipe.

Application of the Unit

Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications and any special instructions are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with the fabrication and installation of non-ferrous pressure piping are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	***Tools and equipment,*** including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient fabrication and installation of non-ferrous pressure piping.
2	Identify installation requirements.	2.1	Pipework configuration is identified from plans, specifications and authorities' requirements.
		2.2	Position of pipes and equipment is determined from plans and specifications, site requirements and so as not to cause damage or interference to surrounding structures or fittings.
		2.3	Measurements for fabrication or assembly are determined and transferred.
		2.4	Quantity and type of ***materials*** required are calculated from plans and specifications according to regulatory authorities and workplace requirements.

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		2.5	Materials are identified, ordered and collected according to workplace procedures.
		2.6	Materials are checked for compliance with docket and order form, and for acceptable condition.
3	Fabricate, install and test pipe system.	3.1	System is set out in compliance with design drawings or instructions.
		3.2	Fixings and supports are installed to manufacturer requirements, job plans, specifications and standards.
		3.3	Pipe system is fabricated and jointed according to plans, standards and manufacturer requirements.
		3.4	Pipe system is installed in specified location without damage or distortion to pipework or surrounding environment or other services.
		3.5	Pipe system is tested and documented to comply with job specification, authorities' requirements, standards, codes and installation requirements.
		3.6	***Sustainability principles and concepts*** are applied throughout the installation process.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	***Information*** is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - plans and specifications
    - documentation from a variety of sources
  - record material quantities
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to join non-ferrous pipe materials by mechanical and manual means, prefabricate components, and fix and test the system for soundness
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- fabrication, installation and testing process for non-ferrous pressure pipe systems
- job safety analysis (JSA) and safe work method statements (SWMS)
- processes for accessing information and for calculating material requirements
- properties and characteristics of conveyed materials, including pressure, flow rates and

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temperature implications
- relevant statutory authorities' requirements and standards related to fabricating, installing and testing non-ferrous pressure pipe systems
- SI system of measurements
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications for the determination of requirements, fabrication, installation and testing of non-ferrous pressure pipe systems
- applying safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- given the plans and specifications, fabricating, installing and testing a DN20 copper line from a supply point to outlets with two changes in direction, using both silver brazing and mechanical joints supported and clipped according to relevant standards and with a branch to be fabricated for testing purposes, as well as branches connecting at least two other non-ferrous materials, ensuring:
    - application of sustainability principles and concepts
    - diameters are correct and system is manufactured to required dimensions and branches, bends and flanges are square
    - correct identification of design and details of proposed non-ferrous pressure pipe system
    - correct selection and use of appropriate processes, tools and equipment
    - completing all work to specification
    - compliance with regulations, standards and organisational quality procedures and processes
    - communicating and working effectively and safely with others.

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Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

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Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- hazardous materials and substances
- protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - use of fabrication tools and equipment

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- dangerous materials
  - service lines
  - surrounding structure and facilities
  - traffic control
  - trip hazards
  - work site visitors and the public
  - working at heights
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements include:

- clean-up protection
- waste management.

Quality assurance requirements may include:

- Australian standards
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- National Construction Code
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:

- elevated work platforms
- hand and power tools
- heating equipment
- ladders
- mechanical bending equipment
- silver brazing equipment
- testing equipment
- lifting and load shifting equipment, including:
  - chain blocks
  - forklifts
  - hand trolleys
  - hoists and jacks
  - rollers
  - scaffolding.

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Materials may include:

- aluminium tubes
- copper
- copper alloy
- polymer pipes
- stainless steel
- other approved materials.

Sustainability principles and concepts:

- cover the social, economic and environmental use of resources to meet current and future needs
- may include:
  - appropriate material selection to ensure minimal environmental impact
  - minimising water wastage
  - efficient use of material
  - material selection
  - recycling material.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to determining, fabricating, installing and testing non-ferrous pressure pipe systems
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

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Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPCM4011A Carry out work-based risk control processes

Modification History

Changes to performance criteria, required skills and knowledge, range statement, critical aspects and context of assessment
Not equivalent to CPCPCM4001A

Unit Descriptor

This unit of competency specifies the outcomes required to carry out work-based risk control processes. It covers the identification of hazards, the assessment of risk, the identification of unacceptable risk and the determination, preparation and completion of a course of action.

Application of the Unit

This unit is to be applied by employees with responsibility for the safety of others, including work activity coordinators, plant operators or equivalent who coordinate workplace activities, team leaders, supervisors and managers.
Site location for work application may be either domestic or commercial and may be a new work site or an existing structure or fitting being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Identify hazards.	1.1	Site conditions and functions are analysed to identify and recognise potential hazards.
		1.2	Relevant ***safety systems information*** is accessed and analysed to eliminate situations covered by existing and adequate procedures.
		1.3	Type and scope of unresolved ***hazards*** and their likely impact are identified.
2	Assess risk.	2.1	***Likelihood*** of the event happening is considered and determined.
		2.2	Consequence if the event should occur is evaluated and determined.
		2.3	***Risk*** level (likelihood and consequence combined) is considered and determined.
3	Identify unacceptable risk.	3.1	Criteria for determining the acceptability and unacceptability of the risk are identified or sought from appropriate authority.
		3.2	Risk is evaluated against criteria to identify if it warrants unacceptable risk status, and is either actioned or referred to the appropriate person.
4	Identify and decide on course of action.	4.1	Range of actions and controls which may eliminate or minimise the risk are identified.
		4.2	All possible options for resolution of the problem and

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			dealing with the risk are identified and considered.
		4.3	Feasible options are subject to detailed analysis, including the identification of resource requirements.
		4.4	Most appropriate action for dealing with the situation is selected.
5	Take action.	5.1	Course of action is planned and prepared in detail.
		5.2	Resources required for course of action are acquired or obtained.
		5.3	Safety information and procedures are accessed and applied throughout the operation.
		5.4	Course of action is implemented, observing ***sustainability principles and concepts***.
6	Complete records and reports.	6.1	***Information*** on course of action and implementation of ***safe operating procedures*** is communicated to relevant people.
		6.2	All hazards and actions from personal risk assessment are recorded as specified by ***statutory and regulatory authorities'*** legislative and workplace requirements.
7	Review effectiveness of risk control measures.	7.1	Risk control measures are periodically reviewed.
		7.2	Review findings are used as the basis for adjustment of control measures.
		7.3	Information is accessed and documentation and risk management processes are adjusted as required.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access and analyse safety systems information
  - communicate with others
  - complete records and reports and other relevant workplace documentation
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use and interpret non-verbal communication, such as hand signals
  - use language and concepts appropriate to cultural differences
- initiative and enterprise skills to:
  - accurately refer critical unacceptable risk situations to others
  - identify and report to appropriate personnel any faults in tools, equipment or materials
- technical skills to:
  - identify courses of action, initiate action and complete records and reports
  - apply the three steps of identifying work-based hazards, assessing the risk and determining unacceptable risk situations

Required knowledge

- industry terminology
- job safety analysis (JSA) and safe work method statement (SWMS)
- materials safety data sheets (MSDS)
- materials handling methods
- personal risk assessment and control processes (hazard identification through to action)
- personal safety measures
- processes for interpreting plans, specifications, drawings and sketches
- quality assurance systems and standards
- regulatory requirements related to obligations and risk management
- reporting and recording procedures
- risk management theory, including the hierarchy of controls on treatments
- work access and traffic control responsibilities
- workplace and equipment safety requirements
- workplace communication methods
- workplace rules, policies, procedures and regulations

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications
- complying with WHS regulations and commonwealth, state and territory legislation applicable to workplace operations
- complying with organisational policies and procedures, including quality assurance requirements
- individually or as a member of a team, participating in two different circumstances requiring:
  - conduct of a plumbing and services work-based risk assessment to identify the acceptability and unacceptability of risk
  - development and implementation of a work-based risk control activity and action
- in each case ensuring:
  - recording and reporting of the risk control process and outcomes
  - sustainability principles and concepts are applied throughout the work-based risk control processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory, Australian standards or International Standards

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Organisation's requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the

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assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Safety systems information may include:

- information that may be contained in:
  - codes of practice
  - international standards
  - legislation and regulations
  - manufacturer instructions
  - management plans
  - manager's rules
  - work health and safety (WHS) policy
  - safe working or job procedures (or equivalent)
- workplace policy, objectives, rules, procedures and assessment techniques that will vary between work locations
- risk assessment terminology, including:
  - being a loss, injury, disadvantage or gain
  - consequence is the outcome of an event or situation expressed qualitatively or quantitatively.

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Hazards:

- are a source of potential harm or a situation with a potential to cause loss
- controls for hazards should be considered using option types in sequence, from eliminating the hazard, substitution, engineering controls, administrative controls (procedures, etc.) and finally personal protective equipment.

Likelihood:

- is used as a qualitative description of probability and frequency
- probability is:
  - expressed as a number between 0 and 1, with 0 indicating an impossible outcome and 1 indicating an outcome is certain
  - likelihood of a specific outcome, measured by the ratio of specific outcomes to the total number of possible outcomes.

Risk:

- criteria for acceptable risk must be determined by the organisation's internal policy, goals and objectives
- in the absence of other authorities, risk management processes must conform with the relevant and current Australian standard
- is measured in terms of consequences and likelihood
- is the chance of something happening that will have an impact upon objectives
- risk assessment is the process used to determine risk management priorities by evaluating and comparing the level of risk against predetermined standards, target risk levels or other criteria
- risk identification is the process of determining what can happen, why and how.

Sustainability principles and concepts:

- cover the social, economic and environmental use of resources to meet current and future needs
- may include:
  - use of materials and resources to meet the current needs of society while preserving the environment for the future
  - disposing of waste material to ensure minimal environmental impact

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- energy efficiency
- water efficiency
- environmental, social and economic considerations.

Information may include:

- charts and hand drawings
- codes of practice
- International Standards Organisation
- instructions issued by authorised organisational or external personnel
- plans and sketches
- JSA and SWMS
- manufacturer specifications and instructions
- maps
- MSDS
- memos
- organisation work specifications and requirements
- records and reports for risk assessment, such as:
  - accident reports
  - hazard reporting forms
  - incident reports
  - near miss reports
  - shift reports
  - supervisor reports
- regulatory and legislative requirements pertaining to work and the environment
- relevant Australian standards
- safe work procedures relating to work in the plumbing and services sector
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Safe operating procedures may include:

- emergency procedures, such as:
  - evacuation
  - fire fighting
  - medical and first aid
- recognising and preventing hazards associated with:
  - electricity
  - fire

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- gas
- other machines
- other services
- overhead services
- personnel
- restricted access barriers
- traffic control
- water
- work site visitors and the public
- working at heights
- working in proximity to others

- safe work access, including ensuring that:
  - access ways are clear
  - equipment and machinery are away from overhangs and refuelling sites
  - safe distances are maintained from excavations
  - safety systems are installed on roofs
  - work areas are secured from unauthorised access or movement.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPCM4012A Estimate and cost work

Modification History

Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPCM4002A

Unit Descriptor

This unit of competency specifies the outcomes required to estimate materials, labour and time requirements and to establish costs for provision of services or products.
The unit covers the gaining of information, the estimation of materials, labour and time, the calculation of costs and the associated documentation.

Application of the Unit

This unit of competency supports the development of estimating and costing skills relevant to minor plumbing jobs.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Gather information.	1.1	Details of customer requirements are obtained through discussion with customer or from information supplied.
		1.2	Plans and specifications are accessed and site is inspected.
		1.3	Details of products and services to be provided are sourced.
		1.4	Delivery point and methods of transportation are determined where necessary.
		1.5	Details are recorded according to workplace procedures.
2	Estimate materials, labour and time.	2.1	Work, including preparatory tasks, is planned and sequenced.
		2.2	Types and quantities of materials required for product work are ***estimated***.
		2.3	Labour requirements to perform work are estimated.
		2.4	Time requirements to perform work are estimated.
		2.5	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.

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3	Calculate costs.	3.1	Total materials, labour and overhead costs are calculated according to workplace procedures using appropriate ***equipment***.
		3.2	Total work cost is calculated, including overheads and mark-up percentages.
		3.3	Final cost for work is calculated.
4	Document and verify details.	4.1	Details of costs and charges are documented according to workplace procedures.
		4.2	Costs, calculations and other details are verified according to workplace procedures.
		4.3	Customer quotation and tender are prepared.
		4.4	Details are documented for future reference according to workplace procedures and using relevant ***information***.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - identify customer requirements
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
- literacy skills to:
  - complete workplace documentation
  - prepare quotes and tenders
  - record details, including costs and charges
- numeracy skills to:
  - estimate materials and labour required for provision of services or products
  - determine costs for the provision of a quotation or tender in the plumbing and services industry
  - apply calculations

Required knowledge

- estimating and calculating processes
- impact of time on wages and other costs
- job safety analysis (JSA) and safe work method statements (SWMS)
- process for estimating and costing work
- processes for accessing information and for calculating material requirements
- relevant statutory requirements related to estimating and costing work
- SI system of measurements
- relevant Australian standards applicable to the work to be undertaken
- tendering and contracting processes
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to the estimation and costing of work
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- estimating and costing three varied jobs in at least Class 1 buildings, including:
  - applying sustainability principles and concepts
  - estimating quantities of material required
  - determining types and amount of labour required to complete the work
  - estimating time required to complete the work
  - estimating overheads associated with the job
  - providing a written quotation and tender for each of the work requirements
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

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Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the

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assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Factors for ***estimating*** and costing must include:
- labour
- materials
- overheads.

Sustainability principles and concepts:
- cover the social, economic and environmental use of resources to meet current and future needs
- may include:
  - use of materials and resources to meet the current needs of society while preserving the environment for the future
  - efficient use and recycling of material
  - disposing of waste material to ensure minimal environmental impact
  - energy efficiency
  - water efficiency.

Equipment may include:
- calculators

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- computers running appropriate software to estimate and calculate necessary details
- measuring equipment appropriate to work
- stationery.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- regulatory and legislative requirements, particularly those pertaining to:
  - codes of practice
  - contracts
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to estimating and costing work
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

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Custom Content Section

Not applicable.

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CPCPCM4013A Produce 2-D architectural drawings using CAD software

Modification History

Changes to application, element, performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPCM4003A

Unit Descriptor

This unit of competency specifies the outcomes required to produce two-dimensional (2-D) architectural drawings using computer-aided design (CAD) software under limited supervision.

Application of the Unit

This unit of competency supports the needs of project managers, site managers, estimators, forepersons and other plumbing and services and building and construction industry personnel responsible for preparing architectural drawings from project briefs, sketches, drawings and plans for residential and commercial construction projects. The drawings produced and notations included should conform to Australian standards and drawing protocols.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Create a drawing template file.	1.1	Basic drawing environment is set up.
		1.2	Suitable layering strategy is created.
		1.3	Suitable architectural library is created.
		1.4	Suitable text and dimension styles are created.
2	Produce architectural drawings to relevant Australian standards.	2.1	***Drawing requirements*** are clarified and confirmed.
		2.2	Drawings are produced using appropriate layers.
		2.3	Notation that complies with Australian standards and ***drawing protocols*** is added to the drawings as required.
		2.4	Dimensions, using appropriate scales according to Australian standards and drawing protocols, are added to the drawings as required.
3	Edit drawing components.	3.1	Elements that are not required are deleted from an existing drawing.
		3.2	Editing commands are used to modify drawing elements and existing text.

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4	Print CAD drawings.	4.1	Page layout for the drawing file is set to suit printing requirements.
		4.2	Print parameters for the printer are set.
		4.3	Drawings are printed on the correct media.
		4.4	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
5	Save and back up files.	5.1	Suitable file directories are created for the drawing project.
		5.2	Drawing files are saved and backed up correctly to specified drives or directories.
		5.3	Saved files are retrieved, renamed and edited as required.
6	Import files.	6.1	Drawing files are inserted correctly into other software applications.
		6.2	Text files are imported into CAD drawings from other software applications.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - seek clarification
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
- creative design, drawing and drafting skills, using CAD software
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - plans, drawings, specifications and design briefs
    - documentation from a variety of sources
- numeracy skills to apply measurements and make calculations
- planning and organising skills to coordinate development of sketches and plans
- technology skills to use computers

Required knowledge

- building materials and techniques
- building services
- construction technology
- document controls
- drafting and drawing protocols
- general work health and safety (WHS) principles and responsibilities
- relevant industry standards and codes of practice
- requirements for the production of working drawings
- structural systems
- SI units of measurement
- types and application of working drawings

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services, and building and construction workplace conditions, materials, activities, responsibilities and procedures.

It may be assessed on its own or as part of an integrated assessment activity involving preparation of CAD drawings, including construction detailing and material identification, for a range of typical National Construction Code (NCC) Type C structures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- given the plans and specifications, producing a 2-D CAD architectural drawing to scale of a plumbing and services layout for a single dwelling (Class 1a) building, ensuring:
  - correct identification of dimensions, symbols, abbreviations and key features of architectural drawings
  - application of sustainability principles and concepts throughout the process of producing 2-D architectural drawings using CAD software.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement

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- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning

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experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Drawing requirements include:

- details, which may include:
  - area analysis
  - construction notes
  - general notes
  - location of neighbouring buildings
  - services
- types of drawing, which must include:
  - elevations or projections
  - floor plans
  - sections
  - site plans.

Drawing protocols include:

- abbreviations
- commonly used symbols
- legends
- lettering standards
- numbering
- paper size
- scale
- SI units of measurement.

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Sustainability principles and concepts:

- cover the social, economic and environmental use of resources to meet current and future needs
- may include:
  - disposing of waste material to ensure minimal environmental impact
  - energy efficiency.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPCM4014A Prepare simple sketches and drawings

Modification History

Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPCM4004A

Unit Descriptor

This unit of competency specifies the outcomes required to produce on-site drawings of work required in buildings up to five floors with residential, commercial, industrial or mixed occupancy. Sketches may be used for estimating purposes and show measurements and other requirements for building and construction or fire, mechanical and/or plumbing services.

Application of the Unit

This unit of competency supports the needs of experienced tradespeople, project managers, estimators and builders with a responsibility for preparing sketches and drawings for scoping and estimating work.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare to make sketches and drawings.	1.1	***Types of drawings required*** and ***key features to be recorded*** are identified through consultation and reference to relevant job documentation and in conformity with the scope and standard practice of the ***relevant industry sector***.
		1.2	***Work health and safety (WHS) requirements*** on site are identified and followed.
		1.3	***Tools and equipment*** required for inspection and measurement and for producing the drawings are gathered and checked for safety and serviceability.
2	Create simple sketches and drawings.	2.1	Inspection of the relevant area is carried out and required measurements are taken and recorded.
		2.2	Any incursions into the fabric of the building for inspection and measuring purposes are made with the least amount of disruption and made good to the relevant standards and finish.
		2.3	Suitable views are selected and simple sketches and drawings created using standard drawing conventions and incorporating relevant codes and standards.
		2.4	Sectional drawings of structural elements are created using standard drawing conventions.

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		2.5	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
3	Notate and process drawings.	3.1	Essential information is recorded on the drawing with symbols and abbreviations according to standard drawing conventions.
		3.2	Drawings are labelled, dated and processed according to organisational administration and quality procedures.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - confirm job specifications and requirements orally and in writing
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- creative design, drawing and drafting skills, including use of drafting equipment
- literacy skills to:
  - read and interpret a range of documents, such as design briefs, sketches, drawings and plans
  - read, interpret and apply relevant standards and codes
- numeracy skills to apply measurements and make calculations
- planning and organising skills to:
  - plan and set out work
  - ensure coordinated development of sketches and drawings
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to access and understand site-specific instructions

Required knowledge

- drawing conventions and features, including direction, scale, key, contours, symbols and abbreviations
- drawing techniques
- requirements of relevant codes, standards and statutory requirements
- safe work methods
- other services and penetrations to be considered

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in a workplace or closely simulated workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- producing clear and effective drawings and sketches with appropriate notations and labelling by creating a set of sketches and drawings for a small work project in the relevant field of expertise, including:
  - application of sustainability principles and concepts
  - measurements and details of components, sub-assemblies, products and models
  - correct calculations of required dimensions
  - other drafting details based on measurements and other relevant information
  - notations and labelling.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe

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work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the

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competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Types of drawings required include:

- floor plans
- land boundaries and footprint of building
- orthographic drawings
- schematic drawings of wiring and pipework
- sectional views.

Key features to be recorded may include:

- for building and construction sketches:
  - ceiling heights and variations
  - doors
  - light fittings and power supplies
  - services
  - wall penetrations
  - walls
- for plumbing services sketches:
  - drains
  - equipment locations
  - fittings
  - incoming water supplies
  - lighting and power supplies
  - obstructions
  - service penetrations
- for fire services sketches:
  - incoming water supplies
  - layout of automatic fire detection and alarm systems

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- lighting
- location of hydrants and hose reels
- obstructions
- passive fire protection
- power supplies
- service penetrations
- for mechanical services sketches:
  - air conditioning requirements
  - ceilings
  - doors
  - lighting and power supplies
  - obstructions
  - walls
  - windows (opening and non-opening).

Relevant industry sectors and their requirements include 2-D and 3-D manual sketches and drawings of building and construction work, including:

- all classes of buildings as defined in the National Construction Code:
  - commercial
  - domestic
  - industrial
  - residential
- plumbing services work, including:
  - gas
  - hydrant and hose reel systems
  - residential and domestic fire sprinkler systems
  - sanitary plumbing and drainage
  - stormwater systems
  - water supply and distribution
- fire services work, including:
  - alarm and detection systems
  - commercial and industrial fire sprinklers systems
  - emergency evacuation
  - hydrant and hose reel systems
  - intercommunication warning systems
  - passive protection
  - residential and domestic fire sprinkler systems
  - smoke and heat venting and air control systems
  - special hazards

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- mechanical services work, including:
  - air handling systems
  - air conditioning systems
  - refrigeration systems
  - smoke and heat venting systems.

Work health and safety requirements may include:

- details of power supplies
- details of all services
- installation of scaffolding
- understanding of hazards located in the area
- use of personal protective equipment.

Tools and equipment include:

- recording devices, such as:
  - computers
  - digital cameras
  - pen and paper.

Sustainability principles and concepts:

- cover the social, economic and environmental use of resources to meet current and future needs
- may include:
  - disposing of waste material to ensure minimal environmental impact
  - energy efficiency.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPCM5010A Design complex sanitary plumbing and drainage systems

Modification History

Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPCM5000A

Unit Descriptor

This unit of competency specifies the outcomes required to undertake the hydraulic engineering design of complex sanitary plumbing and drainage installation and to prepare specifications for a range of residential, commercial and industrial buildings.

Application of the Unit

This unit of competency supports development of skills and knowledge required for competent workplace performance in a consultancy or supervisory capacity in relation to plumbing services and construction hydraulics.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Evaluate design parameters.	1.1	***Scope of work*** is established for complex sanitary plumbing and drainage systems for wide span and high-rise building projects.
		1.2	***Design requirements*** are determined from relevant Australian standards, codes, plans, specifications and client brief.
		1.3	***Cost-benefit analysis*** is conducted comparing a range of pipe materials and system designs.
		1.4	***Statutory and regulatory requirements*** for the design of complex sanitary plumbing and drainage systems are interpreted.
		1.5	***Australian standards and codes*** for the design of complex sanitary plumbing and drainage systems are analysed and applied.
		1.6	***Manufacturer requirements*** and trade and technical manuals are interpreted.
		1.7	Additional research, including a ***desktop study***, is conducted to outline design parameters.
		1.8	***Performance requirements*** are established, considering safety of system users or building occupants.
2	Plan and detail system components.	2.1	***Layout of pipework systems*** and type and location of ***fittings and valves*** are planned.
		2.2	***Access chambers*** and ***gullies*** are designed and detailed.
		2.3	Pipe sizes, pipe grades, and trapping and ventilation

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			requirements are ***calculated*** for a range of applications.
		2.4	***Anchor blocks*** are designed for a range of applications.
		2.5	***Pipe support*** is designed for a range of applications.
		2.6	***Pumpwell, pump and pump control requirements*** are sized and detailed.
		2.7	Approved ***materials***, ***jointing methods*** and ***installation requirements*** for complex sanitary plumbing and drainage systems are specified.
		2.8	Acoustic performance of the sanitary plumbing and drainage system is included in the design.
3	Design and size systems.	3.1	Complex sanitary plumbing and drainage systems are designed for a range of wide span and high-rise building applications.
		3.2	***Rising main systems*** are designed.
		3.3	Complex sanitary plumbing and drainage systems are designed and sized using computer software packages.
		3.4	***Sustainability principles and concepts*** are applied throughout the design process.
4	Prepare documentation.	4.1	Client brief of the desired design is prepared.
		4.2	***Plans*** are prepared for a range of complex sanitary plumbing and drainage systems.
		4.3	***Specification*** for complex sanitary plumbing and drainage systems is prepared.
		4.4	***Testing*** and ***commissioning schedule*** is prepared.
		4.5	***Operation and maintenance manual*** is produced.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - confirm job specifications and client requirements and to communicate with others to ensure safe and effective work practices
  - use clear and direct questioning to:
    - identify and confirm requirements
    - listen and understand
    - share information
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- initiative and enterprise skills to:
  - develop creative and responsive approaches
  - identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - read and interpret:
    - manufacturer requirements and manuals
    - plans, specifications, drawings and design briefs
    - standards
    - statutory and regulatory requirements
  - produce written information, including:
    - documentation, such as plans, specifications and schedules
    - an operation and maintenance manual
- planning and organising skills to:
  - research, collect, organise and understand information relating to the design of complex sanitary and plumbing drainage systems
  - take initiative and make decisions
- problem-solving skills to analyse requirements, consider options and design an appropriate system
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

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Required knowledge

- AS/NZS3500 National plumbing and drainage
- AS2200 Design charts for water supply and sewerage
- common terminology and definitions used in design of complex sanitary plumbing and drainage systems for all classes of building
- National Construction Code
- other relevant Australian standards, codes or standard operating procedures
- principles of technology in the design of hydraulic systems
- procedures for maintaining air balance within the systems
- requirements of state regulatory authorities, Australian standards and manufacturer specifications, including hazards identified in relation to devices and systems used
- workplace safety requirements, including relevant statutory regulations, codes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

It may be assessed on its own or as part of an integrated assessment activity involving carrying out the effective performance and application of drainage principles and detailing system components used in the drainage industry.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- design, size and document the layout details of a complex sanitary plumbing and drainage system, including a specification for a high rise mixed development building; using two approved sanitary plumbing systems, to an effective height above 25 metres, inclusive of a basement, to include fixtures on each floor level (fixtures are included in the basement) and:
  - applying sustainability principles and concepts throughout to achieve a star rating under the Green Building Council of Australia rating scheme
  - evaluating and documenting design parameters, including client, regulatory, manufacturer and relevant Australian standard and code requirements for a range of complex sanitary plumbing and drainage systems
  - evaluating health risks associated with the sanitary plumbing and drainage system
  - planning and detailing system components, including:
    - access chambers (manholes)
    - gullies
    - anchorage blocks

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  - pumpwells
  - piping systems
- designing and sizing a complex sanitary plumbing and drainage system
- applying drainage principles in the design and sizing of a complex elevated pipe system
- designing and sizing a rising main
- designing and sizing a fully vented or fully vented modified system
- designing and sizing a single stack or single stack modified system
- preparing plans to industry standards for a range of complex sanitary plumbing and drainage systems
- preparing a specification for a complex sanitary plumbing and drainage system
- preparing a testing and commissioning schedule
- preparing an operation and maintenance manual
- complying with WHS regulations applicable to workplace operations
- communicating with others to ensure safe and effective workplace operations.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related

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systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team

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leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Scope of work:

- must include:
  - interpretation of plans and specifications
  - sizing and documenting layout of complex sanitary plumbing and drainage systems for applications, including residential, commercial and industrial
- may be for:
  - existing structure being renovated, extended, restored or maintained
  - new projects.

Design requirements may include:

- architectural plans
- building specifications
- fire rating of penetrations
- owner requirements
- pipework identification
- soil quality
- specialist waste applications
- unstable or water-charged ground.

Cost-benefit analysis:

- compares the range of suitable materials and system choices available to enable cost-effective choices to be made without compromising integrity of the project
- may include:
  - design styles
  - expected design life
  - labour costs
  - material costs

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- safety factors
- speed of installation
- suitability of materials
- system choices.

Statutory and regulatory requirements may include:

- Acts and regulations
- local and state government requirements
- preparation of documentation for authorities' approval.

Australian standards and codes may include:

- AS/NZS3500 National plumbing and drainage
- state or territory requirements
- National Construction Code
- other relevant Australian standards and codes.

Manufacturer requirements may include:

- material specifications
- pump tables
- sizing tables
- recommended specific fixings for pipework
- technical and trade manuals.

Desktop study may include collection and interpretation of data for design purposes, such as:

- architectural and building plans
- developer plans
- manufacturers' data
- documents, which may include:
  - applications
  - brochures
  - forms
  - policies
- other reports as available.

Performance requirements must include:

- flow, velocity, pressure and discharge requirements, established using relevant Australian standards, codes and local authority plans.

Layout of pipework systems:

- will be based on principles of economy, serviceability, durability and fit for use
- may include:

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- drainage
- elevated pipework
- low pressure pump
- vacuum
- vented stack systems.

Fittings and valves may include:

- bends
- junctions
- air admittance valves
- reflux valves
- inspection openings
- expansion joints.

Access chamber details may include:

- benching requirements
- flow
- gradient requirements
- inlet and outlet connections
- ladder access
- lids
- open and closed channel
- sizing.

Gullies can cover details such as size, location, bedding and concrete support, and also include:

- boundary traps
- disconnector gullies (DG)
- floor waste (FW)
- overflow relief gullies (ORG).

Calculations for complex sanitary plumbing and drainage systems may include:

- determination of flow and fixture loadings
- gradient calculations
- interpretation of design charts and tables
- pipe sizing calculations
- reduced level calculations
- self-cleaning velocities.

Anchor blocks design elements may include:

- flow forces to be resisted
- keying and anchorage points
- sizes
- soil characteristics.

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Pipe supports may include:

- anchors
- bedding
- bracket spacing
- concrete support
- corrosion protection
- cover
- hanging brackets
- manufacturer-recommended specific fixings
- material requirements
- provision for expansion
- saddles
- wall and ceiling brackets.

Pumpwell, pump and pump control requirements may include:

- access covers
- automatic controls
- capacity
- chains
- corrosion-resistant materials
- detailing
- emergency storage
- high and low-level water controls and alarms
- impeller sizing
- inlet and outlet design requirements
- installation and mounting requirements
- ladder access
- macerator requirements
- odour control
- pump selection
- pump sizing
- pumpwell sizing
- space requirements
- step irons
- valve requirements
- ventilation
- warning system.

Materials may include:

- cast iron (CI)
- concrete
- copper (CU)

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- earthenware (VCP)
- high density polyethylene (HDPE)
- unplasticised polyvinyl chloride (PVC-U)
- other approved material
- fittings and fixtures, including:
  - measures to prevent the spread of fire
  - sound attenuation requirements.

Jointing methods may include:

- brazing and threading
- electrofusion welding
- mechanical joints
- rubber ring
- solvent cement welding.

Installation requirements must include:

- bedding
- clipping
- concrete support
- fire rating of penetrations
- installation details
- jointing requirements
- level of workmanship.

Rising main systems may include:

- approved pressure pipe and fittings
- calculated rise and pump delivery requirements
- pipe velocities
- pump sizing to meet calculated flow conditions.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - selecting appropriate material to ensure minimal environmental impact
  - efficient use of material
  - efficient energy usage/capital outlay comparison
  - effect on the environment due to overflow or leakage
  - water efficiency
  - consideration of the Green Building Council of Australia rating scheme
  - local environment consideration regarding

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overflow, disposal and reuse.

Plans:

- may include:
  - axonometrics
  - cross-sections
  - details
  - elevations
  - isometrics
  - schematics
  - sections
- may be produced using:
  - computer generation
  - drawing equipment.

Specification may include:

- bedding
- commissioning
- concrete support and detailing specialised components
- jointing
- access chambers (manholes)
- manufacturer requirements
- materials
- pumps
- safety (WHS)
- support
- testing
- workmanship.

Testing may include:

- air pressure
- drainage inspection
- hydrostatic
- performance
- quality assurance (QA) audit.

Commissioning schedule may include:

- charging traps
- checking leaks
- checking for foreign material
- checking for system defects
- checking that system functions as per design

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- checking trap water seal retention
- cleaning grates
- system certification.

Operation and maintenance manual may include:

- construction drawings
- results of commissioning test
- certification documentation
- maintenance schedules
- manufacturer brochures and technical information
- manufacturer warranties.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPCM5011A Design complex cold water systems

Modification History

Changes to descriptor, performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPCM5001A

Unit Descriptor

This unit of competency specifies the outcomes required to design complex cold water distribution systems in multi-storey buildings, including pressure, gravity feed, pumped systems and storage regulations.

Application of the Unit

This unit of competency supports development of skills and knowledge required for competent workplace performance in a consultancy or supervisory capacity in relation to plumbing services and construction hydraulics.
Application of the unit is relevant to multi-storey residential, commercial and industrial buildings with or without connection to reticulated water supply.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Evaluate design parameters	1.1	***Scope of work*** is established for the distribution of complex cold water systems for wide span and high-rise building projects.
		1.2	***Design requirements*** are determined from relevant Australian standards, codes, plans, specifications and client brief.
		1.3	***Cost-benefit analysis*** is conducted, comparing a range of materials and system designs.
		1.4	***Statutory and regulatory requirements*** for the design of complex cold water distribution systems are interpreted.
		1.5	***Australian standards and codes*** for the design of complex cold water distribution systems are analysed and applied.
		1.6	***Manufacturer requirements*** and trade and technical manuals are interpreted.
		1.7	Additional research, including a ***desktop study***, is conducted to outline design parameters.
		1.8	***Flow and pressure tests*** are conducted.
		1.9	***Performance requirements*** are established, considering safety of system users or building occupants.

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2	Plan and detail system components.	2.1	***Layout of pipework systems***, type and location of ***fittings and valves***, and acoustic performance of the system are planned.
		2.2	Type, location and requirements for ***backflow prevention devices*** are detailed.
		2.3	***Flush valve system types*** and operation are specified.
		2.4	Pipe sizes, velocities, flows and residual pressures are calculated for a range of applications.
		2.5	***Cold water system components*** are detailed or designed.
		2.6	***Pump, pump controls and pumproom requirements*** are sized and detailed.
		2.7	Approved ***materials***, ***jointing methods*** and ***installation requirements*** for complex cold water distribution systems are specified.
3	Design and size systems.	3.1	Complex cold water distribution systems are designed for a range of wide span and high-rise building applications.
		3.2	Flush valve distribution systems for sanitary ablutions are designed.
		3.3	Range of ***delivery systems*** is designed.
		3.4	Complex cold water distribution systems are designed and sized using computer software packages.
		3.5	***Sustainability principles and concepts*** are applied throughout the design process.
4	Prepare documentation.	4.1	Client brief of the desired design is prepared.
		4.2	***Plans and specifications*** are prepared for a range of complex cold water distribution systems.
		4.3	***Testing*** and ***commissioning schedule*** is prepared.
		4.4	***Operation and maintenance manual*** is produced, including information on how to properly and safely

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maintain the system.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - confirm job specifications and client requirements
  - communicate with others to ensure safe and effective work practices
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to:
  - develop creative and responsive approaches
  - identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - read and interpret:
    - plans, specifications, drawings and design briefs
    - standards and manufacturer requirements and manuals
    - statutory and regulatory requirements
  - produce written documents, including:
    - plans, specifications and schedules
    - operation and maintenance manual
- planning and organising skills to:
  - research, collect, organise and understand information relating to the design of complex cold water systems
  - take initiative and make decisions
- problem-solving skills to analyse requirements, consider options and design an appropriate system
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

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- AS/NZS3500 National plumbing and drainage
- AS2200 Design charts for water supply and sewerage
- common terminology and definitions used in design of cold water reticulation systems
- National Construction Code
- nature of materials used and effects of performance under various conditions
- other relevant Australian standards, codes or standard operating procedures
- principles of technology used in design of cold water reticulation and hydrant and hose reel systems for all classes of building
- requirements of state regulatory authorities, Australian standards and manufacturer specifications, including hazards identified in relation to devices and systems used
- water quality requirements
- work health and safety (WHS) requirements, including relevant statutory regulations, codes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

It may be assessed on its own or as part of an integrated assessment activity involving effective performance and application of drainage principles and detailing of system components used in the drainage industry.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- design, size and document the layout details, including a specification for a high rise mixed development building to a minimum of 29 floors, inclusive of a basement, to include fixtures on each floor level (fixtures are included in the basement) to include:
  - using two methods of providing a cold water supply
  - a non-drinking supply system
  - a flush valve system
- evaluate and document design parameters, including client, regulatory, manufacturer and Australian standard and code requirements for a range of complex water supply systems
- evaluate health risks associated with the drinking and non-drinking water supplies
- apply regulatory, manufacturer and relevant Australian standard and code requirements for a range of complex cold water distribution systems
- plan and detail system components, including:
  - authority's connection
  - backflow prevention requirements
  - fixtures and fitments
  - flush valves

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  - meter assemblies
  - storage tanks
  - piping systems
  - pumps
- comply with WHS regulations applicable to workplace operations
- apply organisational quality procedures and processes
- design and size cold water distribution and delivery systems
- design and size flush valve systems
- prepare a specification for the cold and non-drinking water distribution system
- prepare a testing and commissioning schedule
- prepare an operation and maintenance manual
- apply correct design principles and techniques
- apply sustainability principles and concepts throughout to achieve a star rating under the Green Building Council of Australia rating scheme
- communicate with others to ensure safe and effective workplace operations.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

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Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Scope of work:

- must include interpretation of plans and specifications
- must include sizing and documenting layout of complex cold water systems for applications, including residential, commercial, industrial and health
- may be for new projects or an existing structure being renovated, extended, restored or maintained.

Design requirements may include:

- architectural plans
- building specifications
- effect of water quality on pipework, plant and equipment
- owner requirements
- pipework and valve identification
- soil quality
- specialist water use applications
- unstable or water-charged ground.

Cost-benefit analysis:

- compares the range of suitable materials and system choices available to enable cost-effective choices to be made without compromising the integrity of the project
- may include:
  - expected design life
  - labour costs
  - material costs
  - safety factors
  - speed of installation
  - suitability of materials

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- system choices.

Statutory and regulatory requirements may include:

- local and state government requirements
- preparation of documentation for authorities' approval
- requirements of Acts and regulations.

Australian standards and codes may include:

- AS/NZS3500 National plumbing and drainage
- AS2200 Design charts for water supply and sewerage
- National Construction Code
- state or territory requirements
- other relevant Australian standards or codes.

Manufacturer requirements may include:

- flow and pressure requirements for fixtures and appliances
- material specifications
- pump tables
- sizing tables
- recommended specific fixings for pipework
- technical and trade manuals.

Desktop study may include collection and interpretation of existing data for design purposes, such as:

- architectural and building plans
- manufacturers' data
- developer plans
- documents, which may include:
  - applications
  - brochures
  - forms
  - policies
  - other reports as available.

Flow and pressure tests must include:

- on-site measurement of flow (l/s), velocity (m/s) and pressure (kPa)
- interpretation of flow and pressure tests conducted by a contractor.

Performance requirements may

- flow, velocity, pressure and discharge requirements, established using relevant Australian

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include:

standards, codes, and state, territory and local government authorities' plans.

Layout of pipework systems may include:

- principles of economy, serviceability, durability and fit for use
- dual feed
- gravity feed
- main pressure
- pumped system
- ring main.

Fittings and valves may include:

- fittings:
  - bends
  - elbows
  - tees
  - unions
- valves:
  - backflow prevention
  - excess pressure
  - isolating
  - pressure limiting
  - pressure reduction
  - strainers.

Backflow prevention devices may include:

- registered break tank (RBT)
- registered air gap (RAG)
- double-check valve assembly (DCV)
- dual-check valve with intermediate vent (DuCV)
- reduced pressure detector assembly (RPDA)
- reduced pressure zone device (RPZD)
- other approved devices.

Flush valve system types may include:

- backflow prevention requirements
- gravity
- mains pressure
- pipe sizing requirements
- storage requirements.

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Cold water system components may involve:

- meter assemblies that may be:
  - direct and indirect
  - electronic
  - inferential
  - magnetic
- thrust blocks and their design elements, including:
  - design details for tees, elbows and valves
  - keying and anchorage points
  - sizes
  - soil characteristics
  - velocity and flow forces to be resisted
- pipe supports, including:
  - anchors
  - bedding
  - bracket spacing
  - corrosion protection
  - cover
  - hanging brackets
  - manufacturer-recommended specific fixings
  - material requirements
  - provision for expansion
  - saddles
  - wall and ceiling brackets
- water storage systems, including:
  - air gap
  - automatic controls
  - drain down provision
  - inlet valve design and sizing
  - outlet sizing
  - overflow requirements
  - provision to maintain service while cleaning
  - provision to maintain service while servicing
  - safe tray requirements
  - tank access
  - tank maintenance
  - tank sizes
- water treatment, including:
  - filtration
  - reverse osmosis (RO)

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- softening.

Pump, pump controls and pumproom requirements must include:

- acoustic performance
- automatic changeover
- automatic controls
- drain down provision
- dual pump provision
- impeller sizing
- inlet and outlet design requirements
- installation and mounting requirements
- pressure gauges
- pump selection
- pump sizing
- space requirements
- valve requirements
- variable speed control.

Materials may include:

- acrilonitrile butadiene styrene (ABS)
- composite pipework
- copper (Cu)
- cross-linked polyethylene (PE-X)
- polypropylene (PP)
- polybutylene (PB)
- ductile iron cement lined (DICL)
- other approved materials
- fittings and fixtures
- protective coatings.

Jointing methods may include:

- brazing
- compression
- electrofusion welding
- flaring
- mechanical joints
- rubber ring joints
- screwing
- soldering
- solvent cement welding
- other approved jointing methods.

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Installation requirements must include:

- bedding
- fire rating of penetrations
- clipping
- installation details
- jointing requirements
- level of workmanship
- manufacturer-recommended specific fixings
- pipe support.

Delivery systems may include:

- constant flow variable speed pumps
- gravity feed
- hydropneumatic
- mains pressure system.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - selecting appropriate material to ensure minimal environmental impact
  - efficient use of material
  - efficient energy usage/capital outlay comparison
  - effect on the environment due to overflow or leakage
  - water efficiency
  - consideration of the Green Building Council of Australia rating scheme.

Plans:

- may include:
  - axonometrics
  - cross-sections
  - details
  - elevations
  - isometrics
  - schematics
  - sections
- may be produced using:
  - computer generation
  - drawing equipment.

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Specification may include:

- bedding
- flow requirements
- jointing
- manufacturer requirements
- materials
- residual pressures
- safety (WHS)
- specialised components
- support
- testing
- valve selection
- water treatment
- workmanship.

Testing may include:

- air pressure
- defect inspection
- hydrostatic
- mains pressure
- performance
- quality assurance (QA) audit.

Commissioning schedule may include:

- disinfection
- flow test
- leak check
- pressure test
- system certification
- system defects
- system functions as per design
- system purge
- valve operation.

Operation and maintenance manual may include:

- as installed drawings
- certification documentation
- maintenance schedules
- manufacturer brochures and technical information
- results of commissioning test
- valve function.

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Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPCM5012A Design complex stormwater and roof drainage systems

Modification History

Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPCM5002B

Unit Descriptor

This unit of competency specifies the outcomes required to design complex stormwater and roof drainage systems for commercial, industrial and residential properties.

Application of the Unit

This unit of competency supports the needs of experienced plumbers specialising in hydraulics.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Evaluate design parameters.	1.1	***Client requirements*** are determined from relevant Australian standards, codes, plans, specifications and client brief.
		1.2	***Local government, Environment Protection Authority (EPA), and relevant Australian standards and codes*** for the design of complex stormwater and roof drainage systems are interpreted.
		1.3	Regulatory requirements for design of complex stormwater and roof drainage systems are analysed and applied.
		1.4	***Other documentation relevant to the design*** is researched, evaluated and applied.
		1.5	Safety of system users or building occupants is considered.
2	Plan system components.	2.1	Layout of ***system components*** is planned according to design parameters and site limitations, and is coordinated with other services.
		2.2	Stormwater detention and retention systems and first-flush stormwater systems are planned and evaluated.
		2.3	Most suitable methods of preventing backflow of sub-soil and stormwater into buildings are determined

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			and specified.
		2.4	***Treatment and disposal options for stormwater discharge*** are evaluated and planned.
		2.5	Overland flood path affecting the property and buildings is analysed.
3	Design and size systems.	3.1	***Rainfall intensities are determined*** and volumes of water are estimated using measurements of different ***catchment areas***.
		3.2	Methods of collection and disposal of surface run-off water are specified.
		3.3	Strategies for harvesting and re-using rainwater are identified and evaluated.
		3.4	Sub-soil water types are determined and ***stormwater drainage systems*** are designed, sized and detailed using appropriate calculations and software applications.
		3.5	System components are selected, designed, sized and detailed using appropriate calculations, software applications and ***approved materials***.
		3.6	***Stormwater systems requiring pumping*** are identified and designed using appropriate calculations and software applications, with storage, pump and discharge pipe sizes calculated and specified.
		3.7	Correct installation, laying and jointing procedures for materials and components are specified.
		3.8	***Sustainability principles and concepts*** are applied throughout the design process.
4	Prepare documentation.	4.1	Client brief of the desired design is prepared.
		4.2	***Plans*** and ***specifications*** are prepared for a range of complex stormwater and roof drainage systems.
		4.3	Testing and commissioning schedule is prepared.
		4.4	Operation and maintenance manual is produced, including information on how to properly and safely maintain the system.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to:
  - develop creative and responsive approaches
  - identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to read and interpret:
  - charts and hand drawings
  - job drawings
  - manufacturer specifications and instructions
  - material safety data sheets
  - memos
  - organisational work specifications
  - regulatory requirements
  - requirements and instructions issued by authorised organisational or external personnel
  - signage
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - research, collect, organise and understand information relating to the design of complex stormwater and roof drainage systems
  - take initiative and make decisions
- problem-solving skills to analyse requirements, consider options and design an appropriate system
- technical skills to:
  - apply design concepts and principles
  - communicate graphical representations and plans
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

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Required knowledge

- relevant Australian standards and codes, including:
  - Australian rainfall and run-off document
  - AS/NZS3500 National plumbing and drainage
  - manufacturer specifications
  - National Construction Code
  - other relevant codes or standard operating procedures relevant to the sector
- terminology and definitions used in hydraulic design
- installation methods used in hydraulic systems
- hazards associated with devices and systems used in the hydraulic sector
- environmental requirements, including:
  - clean-up protection
  - stormwater protection
  - waste management
  - water quality management
- quality assurance requirements, including:
  - EPA
  - internal company quality assurance policy and risk management strategies
  - International Standards Organisation
  - site safety plan
  - workplace operations and procedures
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
  - safe work procedures relating to planning, sizing and documenting layout of pipework and fixtures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

It may be assessed on its own or as part of an integrated assessment activity involving production of designs, plans, specifications and supporting documentation for a complex stormwater and roof drainage system.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- design, size and document the layout details, including a specification, of a stormwater system for a site incorporating a high rise mixed development building and a wide span project, such as a school
- evaluate and document design parameters, including client, regulatory, manufacturer and relevant Australian standards and code requirements for a stormwater system
- evaluate health risks associated with the stormwater system
- collect, analyse and evaluate research, including:
  - catchment area
  - survey plans
  - existing services
  - building plans
  - site plans
  - civil drawings
  - reduced levels
  - contour levels
- prepare a plan coordinated with other services for the layout of piping, pits, gullies and other system components according to design parameters and site limitations
- calculate stormwater detention, retention and

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harvesting systems
- calculate roof catchment areas and surface run-off volumes
- determine specifications for guttering requirements and size of downpipes
- design sub-soil drainage systems, including sizing for collection, containment and discharge
- create detail drawings, including long sections and cross-sections
- create a design, including size and detail for complex stormwater and roof drainage systems, including:
  - access chambers (manholes)
  - grade of drains
  - holding pits
  - collection sumps
  - detention, retention and harvesting systems
  - other system components
- apply appropriate software in order to design, size and detail selected stormwater systems
- prepare plans for a range of complex stormwater and roof drainage systems
- prepare a specification for a complex stormwater and roof drainage system
- prepare a testing and commissioning schedule
- prepare an operation and maintenance manual
- apply sustainability principles and concepts throughout to achieve a star rating under the Green Building Council of Australia rating scheme.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions

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- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.
- Assessment processes and techniques should as far

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as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

- Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Client requirements may include:

- architectural plans
- briefs
- site conditions
- statutory bodies
- standards and codes
- specifications.

Local government, Environment Protection Authority, and relevant Australian standards and code requirements may include:

- local government requirements, including:
  - Australian rainfall and run-off documentation
  - Integrated Planning Act (IPA)
  - other regulatory requirements
  - standard drawings and details
  - town planning requirements
  - urban design manuals
- treatment requirements, such as:
  - screens
  - silt traps
  - solid removal systems
- environmental requirements to cover water quality management, including:
  - clean-up protection
  - stormwater protection
  - waste management
- Australian standards and codes, including:

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- National Construction Code
- AS/NZS3500 National plumbing and drainage.

Other documentation relevant to the design must include plans, drawings, manuals and reports regarding:

- buildings
- catchment area analysis
- civil drawings
- contour levels
- existing services
- manufacturer requirements and specifications
- reduced levels
- site plans
- stormwater design
- surveys.

System components may include:

- access chambers (manholes)
- channels
- culverts
- downpipes
- fire rating of penetrations
- grated pits
- gullies
- guttering
- inspection chambers
- inspection openings
- kerbs
- piping
- pits.

Treatment and disposal options for stormwater discharge may include:

- treatment options:
  - grass and rock swales
  - lagoons
  - momentum diffusers
  - ponds
  - screens
  - silt traps
  - traps
  - other solid removal systems as determined
- disposal options:
  - connection to stormwater mains

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- creeks
- harbour
- kerb and street channels
- lakes
- on-site harvesting and reuse
- rainwater collection systems, including tanks and dams
- rivers
- streams.

Rainfall intensities are determined by:

- average rainfall intervals
- roof, surface and subsurface calculations
- site location
- time and concentration.

Catchment areas must include:

- land surface catchment areas, including a variety of surface conditions such as grassed and paved areas
- roof catchment areas.

Stormwater drainage systems may include:

- access chambers (manholes)
- collection sumps
- detention and retention
- grade of drains
- harvesting
- holding pits
- pump discharge.

Approved materials may include:

- piping materials:
  - concrete
  - earthenware or vitrified clay pipe (VCP)
  - fibre cement (FRC)
  - polyvinyl chloride (PVC)
  - other approved materials
- fittings:
  - bends
  - grates
  - gullies
  - junctions
  - non-return valves.

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Stormwater systems requiring pumping must include:

- holding tanks
- overflow provisions
- pump and controls
- rising main.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - selecting appropriate material to ensure minimal environmental impact
  - harvesting and reuse
  - efficient use of material
  - efficient energy usage/capital outlay comparison
  - effect on the environment due to overflow or leakage
  - consideration of the Green Building Council of Australia rating scheme.

Plans:

- may include:
  - cross-sections
  - details
  - elevations
  - sections
  - site
- may be produced using:
  - computer generation
  - drawing equipment.

Specification and user manuals may include:

- commissioning
- bedding
- support
- concrete support and detailing specialised components
- jointing
- access chambers (manholes)
- manufacturer requirements
- materials
- pumps

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- safety (WHS)
- testing
- workmanship.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPCM5013A Design complex (non-solar) heated water systems

Modification History

Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPCM5003B

Unit Descriptor

This unit of competency specifies the outcomes required for the design and specification of complex (non-solar) heated water supply and distribution systems for residential, commercial and industrial applications. The unit includes circulating systems, fuel and energy loads and system selection.

Application of the Unit

This unit of competency supports development of skills and knowledge required for competent workplace performance in a consultancy or supervisory capacity in relation to plumbing services and hydraulics.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	Evaluate design parameters.	1.1	***Scope of work*** is established for heated water supply and distribution systems for wide span and high-rise building projects.
		1.2	***Design requirements***, including the control of Legionella bacteria, are determined from relevant Australian standards, codes, plans, specifications and client brief.
		1.3	***Cost-benefit analysis*** is conducted comparing a range of pipe materials and system designs.
		1.4	***Statutory and regulatory requirements*** for the design of complex (non-solar) heated water supply and distribution systems are analysed and applied.
		1.5	***Manufacturer requirements*** and trade and technical manuals are interpreted.
		1.6	Additional research, including a ***desktop study***, is conducted.
		1.7	***Performance requirements*** are established, considering safety of system users or building occupants.
2	Plan and detail system components.	2.1	***Layout of pipework systems*** and type and location of ***fittings and valves*** are planned.
		2.2	***Thermostatic mixing, tempering*** and control valves are detailed for a range of applications, and appropriate symbols are used.
		2.3	***Circulating heated water supply systems*** are designed and detailed.
		2.4	***Heat trace systems*** are designed and detailed.
		2.5	Warm water systems are designed and detailed, including disinfection and bio-control measures.
		2.6	***Calculations for sizing water heaters*** are conducted and ***methods for the control of expansion*** are detailed.
		2.7	Pipe sizes are calculated and ***pipe supports*** are designed for a range of applications.

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		2.8	***Manifolding heated water units*** are detailed for a range of ***water heaters***, and ***safe trays and overflows*** are specified.
		2.9	Approved ***materials*** and ***jointing methods, insulation materials*** and ***installation requirements*** for a range of water heaters and heated water systems are specified.
		2.10	Allowance for expansion and contraction is provided.
		2.11	Acoustic performance of the system is included in the plan.
3	Design and size systems.	3.1	Complex (non-solar) heated water supply and distribution systems are designed for a range of wide span and high-rise building applications.
		3.2	***Circulating systems*** are designed and detailed.
		3.3	Complex (non-solar) heated water supply and distribution systems are designed and sized using computer software packages.
		3.4	***Sustainability principles and concepts*** are applied throughout the design process.
4	Prepare documentation	4.1	Client brief of the desired design is prepared.
		4.2	***Plans*** are prepared for a range of complex (non-solar) heated water supply and distribution systems.
		4.3	***Specification*** for a heated water supply and distribution system is prepared.
		4.4	***Testing*** and ***commissioning schedule*** is prepared.
		4.5	***Operation and maintenance manual*** is produced, including information on how to properly and safely maintain the system.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - confirm job specifications and client requirements
  - communicate with others to ensure safe and effective work practices
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to:
  - develop creative and responsive approaches
  - identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - prepare written documentation, including plans, specifications and schedules
  - produce an operation and maintenance manual
  - read and interpret:
    - plans, specifications, drawings and design briefs
    - standards and manufacturer requirements and manuals
    - statutory and regulatory requirements
- planning and organising skills to:
  - research, collect, organise and understand information relating to the design of complex (non-solar) heated water systems
  - take initiative and make decisions
- problem-solving skills to analyse requirements, consider options and design an appropriate system
- technical skills to apply design concepts and principles
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- application of National Construction Code, relevant Australian standards, codes and

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manufacturer specifications
- common terminology and definitions used in design of complex (non-solar) heated water systems
- installation methods and hazards identified in relation to devices and systems used according to relevant Australian standards, codes and standard operating procedures
- nature of materials used and effects of performance under various conditions
- work health and safety (WHS) requirements, including relevant statutory regulations, codes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

It may be assessed on its own or as part of an integrated assessment activity involving effective performance and application of principles used to design complex (non-solar) heated water systems.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- design, size and document the layout details, including a specification, for a high rise mixed development building to a minimum of 29 floors, inclusive of a basement to include fixtures on each floor level (fixtures are included in the basement) to include:
  - using two methods of providing a heated water system, one to be gas only and one to incorporate an alternative energy efficient heat source
- evaluate and document design parameters, including client, regulatory, manufacturer and relevant Australian standard and code requirements for a range of heated water supply and distribution systems
- evaluate health risks associated with heated water supplies
- plan and detail system components, including:
  - heat source
  - flue arrangements
  - flow and return systems
  - insulation requirements
  - manifolding systems
  - provision for expansion
  - temperature control device
- comply with WHS regulations applicable to

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workplace operations
- apply organisational quality procedures and processes within context of designing complex heated water systems
- design and size a range of heated water supply and distribution systems
- design and size a range of circulating systems
- prepare plans for a range of heated water supply and distribution systems
- prepare specification for a heated water supply and distribution system
- prepare a testing and commissioning schedule
- prepare an operation and maintenance manual
- apply sustainability principles and concepts throughout to achieve a star rating under the Green Building Council of Australia rating scheme
- communicate with others to ensure safe and effective work site operations.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and

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other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Scope of work:

- must include interpretation of plans and specifications
- must include sizing and documenting layout of heated water supply and distribution systems for applications including residential, commercial, industrial and health
- may be for new projects or an existing structure being renovated, extended, restored or maintained.

Design requirements must include:

- architectural plans
- builder specifications
- fire rating of penetrations
- flue requirements
- owner requirements
- pipework identification
- specialist heated water use applications.

Cost-benefit analysis:

- compares the range of suitable materials and system choices available to enable cost-effective choices to be made without compromising the integrity of the project
- may include:
  - design styles
  - energy costs
  - expected design life
  - labour costs
  - material costs
  - safety factors
  - speed of installation
  - suitable materials
  - system choices.

Statutory and regulatory requirements must include:

- Acts and regulations
- National Construction Code

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- relevant Australian standards and codes, including AS/NZS3500 National plumbing and drainage
- local government and health department requirements.

Manufacturer requirements may include:

- material specifications
- heater maintenance and servicing
- provision for heater pressure and temperature discharge
- pump tables
- sizing tables
- recommended specific fixings for pipework
- technical and trade manuals.

Desktop study may include collection and interpretation of data for design purposes from:

- architectural and building plans
- developer plans
- other documents, including:
  - applications
  - brochures
  - forms
  - policies
  - other reports as available.

Performance requirements must include:

- those established using relevant Australian standards, building codes and other relevant documents.

Layout of pipework systems may include:

- dead leg
- pressurised
- thermo convection
- circulating.

Fittings and valves may include:

- fittings:
  - bends
  - tees
  - unions
- valves:
  - backflow prevention
  - cold water expansion

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- isolating
- non-return, including high pressure non-return
- pressure limiting
- pressure relief
- strainers
- temperature control.

Thermostatic mixing and tempering valves may include:

- bimetallic types
- wax capsule.

Circulating heated water supply system details may include:

- circulating pump specification
- dead leg minimisation
- flow and return pipework
- circulation
- pipe insulation
- thermal convection circulating.

Heat trace systems may include:

- installation requirements
- running costs
- serviceability.

Calculations for sizing water heaters may include:

- coefficient of expansion
- daily flows
- energy consumption
- heat losses
- mixed temperatures
- peak demand
- recovery times
- size and quantity of heated water required
- standby versus continual flow
- tariffs
- water expansion.

Methods for the control of expansion may include:

- U-bends
- coiled loop
- lyre bend
- offset bends
- proprietary expansion control devices.

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Pipe support may include:

- anchors
- bracket spacing
- corrosion protection
- hanging brackets
- material requirements
- provision for expansion
- saddles
- wall and ceiling brackets.

Manifolding heated water units must include:

- balanced flow conditions and valves
- pressure relief requirements.

Water heaters:

- may include:
  - continuous flow
  - heat transfer
  - pressure storage systems
  - open vented storage systems
- heated source may include:
  - electricity
  - gas
  - heat pump
  - solar
  - solid fuel
  - waste heat.

Safe trays and overflows must include:

- design
- discharge
- materials
- sizes.

Materials may include:

- pipe materials as specified, including:
  - copper
  - composite
  - polymer
  - other approved materials
- flue materials, including stainless steel
- ancillary material, including:

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- air relief valve
- heaters
- fittings and fixtures
- insulation
- pumps
- valves.

Jointing methods may include:

- brazing
- compression
- electrofusion welding
- flaring
- mechanical joints
- threading.

Insulation materials may include:

- fibre glass
- foam
- metal sheathing
- rock wool
- other approved materials.

Installation requirements must include:

- fire rating of penetrations
- level of workmanship
- manufacturer-recommended specific fixings
- pipe support
- provision for expansion
- serviceability and access.

Circulating systems may include:

- approved pressure pipes and fittings
- balancing valves
- circulating pump and controls
- isolating valves
- thermo cycle
- temperature gauge
- pump sizing to meet calculated flow conditions.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - selecting appropriate material to ensure minimal

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environmental impact
- efficient use of material
- efficient energy usage/capital outlay comparison
- selection of energy efficient water heater
- water efficiency
- consideration of the Green Building Council of Australia rating scheme.

Plans:

- may include:
  - axonometrics
  - cross-sections
  - details
  - elevations
  - isometrics
  - schematics
  - sections
- may be produced using:
  - computer generation
  - drawing equipment.

Specification may include:

- support
- jointing
- flow requirements
- manufacturer requirements
- materials
- residual pressures and temperature
- safety (WHS)
- specialised components
- testing
- valve selection
- water treatment
- workmanship.

Testing may include:

- air pressure
- defect inspection
- flue operation
- hydrostatic
- mains pressure
- performance

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- quality assurance (QA) audit.

Commissioning schedule may include:

- balancing the system
- checking and flushing the system
- disinfection
- flow test
- flue operation
- leak check
- pressure test
- system certification
- system defects
- system functions as per design
- system purge
- temperature setting
- valve operation.

Operation and maintenance manual may include:

- as installed drawings
- results of commissioning test
- certification documentation
- heater details, settings and operations
- maintenance schedules
- manufacturer brochures and technical information
- valve function.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPCM5014A Design sewer infrastructure systems

Modification History

Changes to unit title, descriptor, performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPCM5004A

Unit Descriptor

This unit of competency specifies the outcomes required to design and document sewer infrastructure systems, including specifying responsibilities, procedures and safety standards for sewerage equipment, construction, soil classification, pipelaying techniques and trench construction; analysing factors relating to pumping and tunnelling; and supervising the installation of a sewer infrastructure system.

Application of the Unit

This unit of competency supports development of skills and knowledge required for competent workplace performance in a consultancy or supervisory capacity in relation to plumbing services and hydraulics.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare and implement sewer contracts.	1.1	Sewer contracting procedures are implemented.
		1.2	Required qualifications, roles and responsibilities of local authority personnel and contracted parties are documented.
2	Evaluate design parameters.	2.1	***Scope of work*** is established for sewer infrastructure systems.
		2.2	***Design requirements*** are determined from relevant Australian standards, codes, plans, specifications and client brief.
		2.3	***Cost-benefit analysis*** is conducted comparing a range of pipe materials and system designs.
		2.4	***Statutory and regulatory requirements and relevant Australian standards and codes*** for the design of sewer infrastructure systems are analysed and applied.
		2.5	***Manufacturer requirements*** and trade and technical manuals are interpreted.
		2.6	Additional research, including a ***desktop study***, is conducted to outline design parameters.
		2.7	Factors that contribute to quality, safety and time efficiency are determined.
		2.8	Point of connection to the authority's system is determined.
		2.9	***Safety procedures and regulations for trench safety*** and for pumping stations are specified.

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		2.10	***Performance requirements*** are established.
		2.11	Pipe sizes are assessed using equivalent population (EP) density.
3	Plan and detail system components.	3.1	Soils are tested and classified and characteristics of soil types are analysed.
		3.2	***Trenching safety procedures*** are detailed and backfilling and compaction methods are specified.
		3.3	***Layout of pipework systems*** and type and location of ***fittings, valves and controls*** are planned.
		3.4	***Pipelaying***, dewatering and testing procedures for installation of pipework of varying sizes are specified.
		3.5	Self-cleaning velocities, ***pipe size and grade, and ventilation requirements are calculated*** for a range of systems.
		3.6	Sewer connections, ***access chambers***, bedding material and support systems are detailed.
		3.7	***Requirements for pump station, pumps, controls and equipment*** are sized and detailed.
		3.8	Approved ***materials***, ***jointing methods*** and ***installation requirements*** for sewer infrastructure systems are specified.
		3.9	Maintenance procedures of the system are identified.
4	Design and size systems.	4.1	Easements and location for sewer infrastructure systems are identified, including pumping ***rising mains***.
		4.2	Sewer infrastructure systems are designed for a range of applications.
		4.3	Sewer long sections are designed and detailed.
		4.4	Pump rising main systems are designed.
		4.5	Pumping stations are designed.
		4.6	Sewer infrastructure systems are designed and sized using calculations and ***computer software packages***.

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		4.7	Ventilation requirements are determined and designed.
		4.8	***Sustainability principles and concepts*** are applied throughout the design process.
5	Prepare documentation.	5.1	Client brief of the desired design is prepared.
		5.2	***Plans*** and ***specification*** are prepared for a range of sewer infrastructure systems.
		5.3	***Testing*** and ***commissioning schedule*** is prepared.
		5.4	***Operation and maintenance manual*** is produced, including information on how to properly and safely maintain the system.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - communicate with others to ensure safe and effective work practices
  - confirm job specifications and client requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to:
  - develop creative and responsive approaches
  - identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - read and interpret:
    - plans, specifications, drawings and design briefs
    - standards and manufacturer requirements and manuals
    - statutory and regulatory requirements
  - produce written documentation, including:
    - plans, specifications and schedules
    - an operation and maintenance manual
- planning and organising skills to:
  - research, collect, organise and understand information relating to the design of sewer infrastructure systems
  - take initiative and make decisions
- problem-solving skills to analyse requirements, consider options and design an appropriate system
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- application of:
  - relevant Australian standards, including Sewerage Code of Australia

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  - manufacturer specifications, including hazards identified in relation to devices and systems used
  - fire safety requirements
  - other codes or standard operating procedures
  - pipe sizing procedures
  - pump selection and rising main requirements
  - ventilation requirements
  - regulatory authorities' requirements
- common terminology and definitions used in the design of sewer infrastructure systems
- nature of materials used and effects of performance under various conditions
- principles of technology in the design of sewer infrastructure systems
- workplace safety requirements, including relevant statutory regulations, codes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

It may be assessed on its own or as part of an integrated assessment activity involving preparation of designs for two sewer systems for different applications, including plans, specifications and all associated documentation.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- design, size and document the installation and layout details for a sewer infrastructure system of a residential development of 50 properties, incorporating a gravity system and pumping station, to include:
  - sewer reticulation mains
  - pump station
  - pump rising main
  - ventilation
  - odour control
- evaluate and document design parameters to relevant Australian standards and codes, and regulatory, client and manufacturer requirements
- specify soil identification and trench safety procedures
- prepare plans and specifications
- prepare testing and commissioning schedules
- prepare operation and maintenance manuals
- apply sustainability principles and concepts throughout the process
- communicate with others to ensure safe and effective workplace operations.

Context of and specific resources

This competency is to be assessed using standard and

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for assessment

authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace

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- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Scope of work:

- must include:
  - interpretation of plans and specifications
  - sizing and documenting layout of sewer infrastructure systems
- may be for either new projects or existing sewer mains being extended.

Design requirements may include:

- architectural plans
- builder specifications
- Sewerage Code of Australia
- fire safety requirements
- owner requirements
- pipework identification
- flow requirements and sizing of pipework

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- ventilation requirements.

Cost-benefit analysis:

- compares the range of suitable materials and system choices available to enable cost-effective choices to be made without compromising the integrity of the project
- may include:
  - design styles
  - energy costs
  - expected design life
  - labour costs
  - material costs
  - safety factors
  - speed of installation
  - suitable materials.

Statutory and regulatory requirements and relevant Australian standards and codes may include:

- Acts, regulations and commonwealth, state or territory, and local government policies
- AS/NZS3500 National plumbing and drainage
- AS2200 Design charts for water supply and sewerage
- Environmental Protection Authority (EPA)
- National Construction Code
- Sewerage Code of Australia
- other relevant Australian standards and codes.

Manufacturer requirements may include:

- material specifications
- collection and storage systems
- design and installation
- equipment installation
- pump installation
- technical manuals.

Desktop study may include collection and interpretation of data for design purposes, such as:

- architectural and building plans
- developer's plans
- equivalent population (EP) density
- manufacturer's data
- other documents, including:
  - forms

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- brochures
- applications
- policies
- regulations
- other reports as available.

Safety procedures and regulations for trench safety:

- may include:
  - analysing factors that determine tunnelling
  - assessing and identifying types of soil requiring tunnel excavation and shoring procedures
  - defining methods of trench installation
  - defining procedures for trench rescue
- specify safety procedures with reference to:
  - advisory standards
  - compliance standards
  - industry standards
  - Work Health and Safety Act
  - other Acts, codes or regulations relating to trenching
  - working in confined spaces.

Performance requirements are established using relevant Australian standards, codes and local authorities' requirements may include:

- discharge requirements
- durability
- emergency storage backup
- longevity
- self-cleaning ability
- sufficient capacity.

Trenching safety procedures may include:

- conditions affecting trench stability
- condition of soils disturbed by previous excavations
- effect of water on excavations
- effects of moisture content on excavated trenches
- traffic and vibrations
- confined space safety requirements, e.g. for exhaust emissions
- prevention of trench collapse
- trench collapse procedures
- trench inspection procedures
- trench excavation methods used for different:

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- backfilling methods
- bedding methods
- depth
- slope
- support systems
- types.

Layout of pipework systems may include:

- gravity
- pumped and rising mains
- vacuum
- identification of easements and location for sewer infrastructure systems, including pumping rising mains
- layout, which must:
  - not unduly affect building integrity and aesthetic appeal
  - have principles of economy, serviceability, durability and fit for use applied.

Fittings, valves and controls may include:

- fittings, including:
  - bends
  - flanges
  - junctions
  - inspection openings
  - unions
- valves, including:
  - non-return
  - isolation
- controls, including:
  - level
  - alarms
  - management communication systems.

Pipelaying may include:

- cutting, handling and storage procedures
- fittings used for sewerage work
- jointing methods and procedures
- laying procedures for pipework
- methods of dewatering trenches methods of grading and maintaining pipe direction and reduced levels
- methods of placing bedding materials, encasing

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	pipes, backfilling and compacting • methods of testing sewer drains • methods of pressure testing pump rising mains.
Pipe size, pipe grade and ventilation requirement calculations may include:	• determination of flow and loadings • gradient calculations • equivalent population (EP) density • interpretation of design charts and tables • pipe sizing calculations • projected flows • pumping flow rates • reduced level calculations • self-cleaning pipe velocities • stormwater infiltration • system ventilation.
Access chamber details must include:	• access • benching • connections • covers • flow and gradient • open and closed channel • sizing.
Pump station, pumps, controls and equipment requirements may include:	• access covers • access ladders • automatic controls • capacity • corrosion-resistant materials • emergency storage and power supply • impeller sizing and selection • inlet and outlet design • installation and mounting • odour control • macerator requirements • management communication system • provision for servicing • pump selection • pumpwell sizing • space requirements

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- valves
- ventilation
- warning system.

Materials may include:

- cast iron (CI)
- concrete
- vitrified clay pipes (VCP)
- polyethylene (PE)
- polypropylene (PP)
- unplasticised polyvinyl chloride (PVC-U)
- other approved material.

Jointing methods may include:

- electrofusion welding
- mechanical joints
- rubber ring
- solvent cement welding
- other approved jointing methods.

Installation requirements may include:

- bedding
- pipe protection, which may include:
  - cover
  - corrosion
  - impact
- level of workmanship
- manufacturer-recommended specific fixings
- pipe support
- provision for pipe movement
- serviceability and access.

Rising main systems may include:

- approved pressure pipe and fittings
- calculated rise and pump delivery requirements
- environmental protection
- pump sizing to meet calculated flow conditions
- self-cleaning pipe velocities
- odour control.

Computer software packages include:

- manufacturer software
- proprietary design software.

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Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - selecting appropriate material to ensure minimal environmental impact
  - efficient use of material
  - efficient energy usage/capital outlay comparison
  - consideration of the Green Building Council of Australia rating scheme.

Plans:

- **may include**:
  - axonometrics
  - cross-sections
  - details
  - elevations
  - isometrics
  - schematics
  - site
  - sections
- may be produced using:
  - computer generation
  - drawing equipment.

Specification may include:

- bedding
- commissioning
- excavation requirements
- support
- concrete support and detailing specialised components
- jointing
- access chambers (manholes)
- manufacturer requirements
- materials
- piping
- pumps
- pumping stations
- safety (WHS)
- testing
- workmanship.

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Testing may include:

- air pressure
- drainage inspection
- hydrostatic
- performance
- compliance with authorities discharge requirements
- quality assurance (QA) audit.

Commissioning schedule must include:

- system certification
- check for foreign material
- containment
- leak check
- operational
- pumping
- system defects
- system functions as per design
- ventilation
- odour control
- WHS compliance.

Operation and maintenance manual may include:

- as installed drawings
- certification documentation
- emergency procedures
- results of commissioning test
- maintenance schedules
- manufacturer brochures and technical information
- odour control
- WHS requirements
- ventilation.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

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Custom Content Section

Not applicable.

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CPCPDR2021A Locate and clear blockages

Modification History

Prerequisite unit updated
Changes to descriptor, performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPDR2011A

Unit Descriptor

This unit of competency specifies the outcomes required to locate and clear blockages to sanitary plumbing and drainage with the use of mechanically operated drain clearing machines and attachments, closed circuit television (CCTV) and manually operated drain cleaning tools and equipment where required.

Application of the Unit

This unit of competency supports development of skills to identify and clear common plumbing system blockages using a range of specialist equipment.
Site location for work application may be either domestic or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications are obtained from job supervisor.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with locating and clearing blockages are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient locating and clearing of blockage.
2	Locate and clear blockage.	2.1	Section containing blockage is located and isolated and its ***material*** identified.
		2.2	Blockage clearing equipment is selected according to the job.
		2.3	Where necessary, mechanical drain clearing equipment is assembled and used according to manufacturer instructions.
		2.4	Blockage is cleared without causing damage to pipework and fittings.
		2.5	Pipework is tested to confirm blockage is cleared from pipe system.

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		2.6	Where required, authorities are advised of work completion.
		2.7	***Sustainability principles and concepts*** are applied throughout the locating and clearing process.
3	Clean up.	3.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job.
		3.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		3.3	***Information*** is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to locate and clear blockages, such as tree roots and other refuse, from sanitary plumbing, water and sewerage pipe installations and drainage and roof installations using:
  - mechanically operated drain clearing machines and attachments
  - manually operated drain cleaning tools and equipment
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- characteristics of different pipes, fittings and fixture supports, including fixing and joining techniques

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- correct materials handling processes
- effective isolation processes and procedures
- job safety analysis (JSA) and safe work method statements (SWMS)
- mechanical and hydraulic principles for clearing blockages
- processes of clearing blockages
- properties of water, including pressure and flow rates
- relevant statutory requirements
- SI system of measurements
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to locate and clear blockages
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- locating and clearing blockages from drainage pipework using both manual tools and mechanical equipment, ensuring:
  - application of sustainability principles and concepts
  - correct identification of location and clearance process
  - correct selection and use of appropriate tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or

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Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken

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at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- hazardous materials and substances
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - blockage clearance tools and equipment
  - dangerous materials
  - identifying and testing for electrical hazards
  - other machines
  - recently filled trenches
  - services
  - surrounding structure and facilities
  - traffic control
  - trip hazards

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- work site visitors and the public
- working in confined spaces
- working in proximity to others
- use of tools and equipment
- workplace environment and safety
- use of firefighting equipment
- use of first aid equipment.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Quality assurance requirements may include:

- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:

- hacksaw
- hand and power tools
- heating equipment
- manually operated drain cleaning, including plungers and rods
- measuring equipment
- mechanically operated drain clearing machines and attachments, including the use of a sanitary snake
- pipe cameras
- pipe locating equipment
- plungers
- rods.

Materials may include:

- cast iron pipework
- concrete
- high density polyethylene (HDPE)
- unplasticised polyvinyl chloride (PVC-U)
- vitrified clay
- other approved materials.

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Sustainability principles and concepts:

- cover the social, economic and environmental use of resources to meet current and future needs
- may include:
  - effective water use
  - containment and correct disposal of waste.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job plans
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
- building codes
- WHS and environmental requirements
- plumbing regulations
- relevant Australian standards
- safe work procedures relating to locating and clearing blockages
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

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Custom Content Section

Not applicable.

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CPCPDR2022A Install domestic treatment plants

Modification History

Prerequisite unit updated plus minor changes to unit
Not equivalent to CPCPDR2012A

Unit Descriptor

This unit of competency specifies the outcomes required to install approved prefabricated domestic treatment plants.

Application of the Unit

This unit of competency supports development of skills for installation of treatment plants in domestic situations.
Site location for work application may be a new work site, or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	Prepare for work.	1.1	Plans, drawings and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with installing domestic treatment plants are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient installation of domestic treatment plants.
2	Identify installation requirements.	2.1	Position of domestic treatment plant is determined according to plans and specifications and site requirements, and does not cause damage or interference to surrounding structures or services.
		2.2	Design and capacity of plant are confirmed to comply with relevant Australian standards and requirements of regulatory authorities, the installation and the site.
		2.3	Quantity and type of ***materials*** required are calculated from plans, drawings and specifications.
		2.4	Materials are ordered and checked for compliance with docket and order form, and for acceptable condition.
3	Install domestic treatment plant.	3.1	Size and location of excavation are marked out to comply with plans, drawings and specifications, installation and site requirements.
		3.2	Site is excavated and preparation for installation is undertaken according to installation requirements for the plant, plans, permits and site requirements, ensuring minimal damage to surrounding structures or environment.

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		3.3	Domestic treatment plant is installed and secured in specified position to prevent movement or damage to plant in compliance with requirements of responsible authority for the installation and inspection of domestic treatment plants.
		3.4	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
		3.5	Plant is filled with water to prevent flotation as required.
		3.6	Excavation is backfilled to specifications.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	***Information*** is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
  - correctly install an approved prefabricated domestic treatment plant
  - excavate plant site for installation purposes
  - identify and accurately report to appropriate personnel faults in tools, equipment or materials
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- characteristics and application of different pipe fittings and fixture supports, including fixing and jointing techniques
- excavation processes and procedures

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- job safety analysis (JSA) and safe work method statements (SWMS)
- levelling and alignment processes
- load lifting and handling procedures
- principles and techniques of effluent treatment and disposal
- processes for accessing information and for calculating material requirements
- regulations and requirements of regulatory authorities regarding effluent disposal and the installation of domestic treatment plants
- SI system of measurements
- standards applicable to the installation
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to install a domestic treatment plant
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, marking out, planning work and installing an approved domestic treatment plant, ensuring:
  - application of sustainability principles and concepts
  - correct identification of location, design and details of proposed installation
  - correct selection and use of appropriate processes, tools and equipment
  - completion of all work to specification
  - compliance with regulations, relevant Australian standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

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Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken

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at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control and hazardous materials and substances
- other machines
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- recently filled trenches
- safe operating procedures, including recognising and preventing hazards associated with:
  - dirt mounds
  - electricity
  - excavation equipment and plant
  - pits
  - poles
  - surrounding structure and facilities
  - trip hazards

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- underground services
- uneven and unstable terrain
- work site visitors and the public
- working in confined spaces
- working in proximity to others
- traffic control
- use of firefighting equipment
- use of first aid equipment
- use of tools and equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Quality assurance requirements may include:

- environment policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:

- excavation plant and equipment
- hand and power tools
- ladders
- lifting and load shifting equipment
- manual excavation equipment
- measuring equipment.

Materials may include:

- polymer
- concrete
- other approved materials.

Sustainability principles and concepts:

- cover the social, economic and environmental use of resources to meet current and future needs
- may include:
  - disposing of waste material to ensure minimal environmental impact

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- selecting material to ensure minimal environmental impact
- using and recycling material efficiently
- using energy and water efficiently.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to installing domestic treatment plants
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPDR2023A Maintain effluent disinfection systems

Modification History

Prerequisite unit updated
Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPDR2013A

Unit Descriptor

This unit of competency specifies the outcomes required to maintain chlorine disinfection systems for domestic treatment plants.

Application of the Unit

This unit of competency supports development of skills to maintain a range of effluent treatment systems.
Site location for work application may be domestic and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS***) requirements***, including those related to electrical safety, and ***environmental requirements*** associated with maintaining effluent disinfection systems are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient maintenance of the effluent disinfection system.
2	Identify system requirements.	2.1	Where required, maintenance approval is submitted to regulatory authorities according to their requirements.
		2.2	Site is inspected to confirm compliance with standards and authorities' requirements for effluent drainage systems.
		2.3	Detention capacity, effluent flow and effluent disinfection flow in the contact chamber are checked for compliance with regulatory authorities' requirement for effluent disinfection.
		2.4	Quantity and type of materials required are calculated from design drawings and specifications in compliance with standards, local authorities' and manufacturer

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			requirements, and job plans and specifications.
		2.5	***Materials*** are identified, ordered and collected according to workplace procedures.
		2.6	Materials are checked for compliance with docket and order form, and for acceptable condition.
		2.7	***Sustainability principles and concepts*** are applied throughout the maintenance process.
3	Maintain effluent disinfection system.	3.1	System is maintained according to standards and authorities' and manufacturers' requirements to ensure effluent is thoroughly mixed, discharge meets treatment requirements and access is maintained.
		3.2	Effluent is tested for total chlorine, and dosage rate is adjusted to achieve the levels and stability required by standards and regulatory authorities.
		3.3	Inspection chamber is returned to normal operation.
		3.4	Relevant authorities are advised of the completion of the work and of any continuing inspection and maintenance requirements.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulation, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	***Information*** is accessed and documentation, including advice of completion and subsequent inspection and maintenance requirements of the system, is completed according to regulatory authorities and workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete documentation, including advice of completion of work and continuing inspection and maintenance requirements
  - complete other relevant workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - submit request for maintenance approval
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to maintain an effluent disinfection system for the treatment of secondary effluent in a domestic treatment plant or installations identified by regulatory authorities as requiring an effluent disinfection system
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- inspection and assessment procedures for effluent disinfection systems

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- job safety analysis (JSA) and safe work method statements (SWMS)
- principles of drainage design
- principles of effluent chlorine disinfection and the operation of effluent chlorine disinfection systems, including their adjustment to meet necessary output measures
- processes for accessing information and for calculating material requirements
- relevant statutory and authorities' requirements related to installing effluent disinfection systems
- SI system of measurements
- standards applicable to the installation
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to maintain effluent disinfection systems
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, demonstrating the maintenance procedure for an effluent disinfection system for a domestic treatment plant, ensuring:
  - application of sustainability principles and concepts throughout the maintenance process
  - correct identification of maintenance requirements
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

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Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and

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practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- hazardous materials and substances
- identifying and testing for electrical hazards
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- use of firefighting equipment
- use of first aid equipment
- use of tools and equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management
- dosage rates of chemicals carried out according to

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	manufacturers' specifications • safe handling and storage of chemicals.
Quality assurance requirements may include:	• Environment Protection Authority (EPA) • internal company quality assurance policy and risk management strategy • International Standards Organisation • site safety plan • workplace operations and procedures.
Tools and equipment may include:	• hand and power tools • levelling equipment • lifting equipment • measuring equipment • testing equipment.
Materials may include:	• concrete effluent disinfection systems • fibreglass effluent disinfection systems • other approved materials.

Sustainability principles and concepts:	• cover the current and future social, economic and environmental use of resources
	• may include:
	  • efficient water usage
	  • handling, storage and correct disposal of waste
	• safe handling and storage of chemicals.

Information may include:	• charts and hand drawings
	• instructions issued by authorised organisational or external personnel
	• manufacturer specifications and instructions
	• material safety data sheets (MSDS)
	• memos
	• organisation work specifications and requirements
	• plans and sketches
	• regulatory and legislative requirements, particularly those pertaining to:
	  • building codes
	  • WHS and environmental requirements

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- plumbing regulations
- relevant Australian standards
- safe work procedures relating to the maintenance of effluent disinfection systems
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPDR2024A Install stormwater and sub-soil drainage systems

Modification History

Prerequisite unit updated plus minor changes to unit
Not equivalent to CPCPDR2014A

Unit Descriptor

This unit of competency specifies the outcomes required to install stormwater and sub-soil drainage systems to an approved point of discharge.

Application of the Unit

This unit of competency supports development of skills for the installation of stormwater and underground drainage systems.
Site location for work application may be either domestic or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with installing stormwater and sub-soil drainage systems are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	Tools and equipment, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient installation of the stormwater and sub-soil drainage system.
2	Determine installation requirements.	2.1	Position of installation is determined according to plans, specifications and site requirements, including ***legal point of discharge.***
		2.2	Quantity and type of materials required are calculated from design drawings and specifications and comply with relevant Australian standards, local authorities' requirements and job plans and specifications.
		2.3	***Materials*** are identified, ordered and collected according to workplace procedures.
		2.4	Materials are checked for compliance with docket and order form, and for acceptable condition.
3	Install stormwater and sub-soil drainage.	3.1	Size and location of excavation are marked out to comply with plans and specifications, and installation and site requirements.
		3.2	Site is excavated according to plans and specifications, site requirements and relevant Australian standards, ensuring minimum damage to surrounding structures or environment.

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		3.3	Pipework, and stormwater and sub-soil drainage system are installed according to plans and specifications, site requirements or job instructions, and relevant Australian standards, with consideration given to existing pipework and other services.
		3.4	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
		3.5	Installation is tested to comply with relevant Australian standards and relevant ***statutory and regulatory authorities'*** requirements.
		3.6	Inspection openings and covers are fitted according to relevant Australian standards and job specifications.
		3.7	Excavation is back-filled according to relevant Australian standards and job specifications.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	***Tools and equipment*** are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	***Information*** is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to install a drainage system to take stormwater from a downpipe or surface collection pit, and groundwater to a legal point of discharge
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- characteristics and application of different pipe fittings and fixture supports, including fixing and jointing techniques
- excavation processes and procedures
- job safety analysis (JSA) and safe work method statements (SWMS)
- levelling and alignment processes

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- process of installing stormwater and sub-soil drainage systems
- processes for accessing information and for calculating material requirements
- properties of water, including pressure and flow rates
- relevant statutory and authorities' requirements related to installing stormwater and sub-soil drainage systems
- SI system of measurements
- standards applicable to the installation
- water and air test systems and procedures
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, Australian standards and specifications to set out, install and test stormwater and sub-soil drainage systems
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, installing a stormwater and sub-soil drainage system, including:
  - a stormwater drain which is to connect from a downpipe to an approved point of discharge
  - a subsoil drain which is to connect to a disposal and collection pit
- both drains are to be at least 4 metres in length, ensuring:
  - applying sustainability principles and concepts
  - correctly identifying location, design and details of proposed installation
  - correctly selecting and using appropriate processes, tools and equipment
  - completing all work to specification
  - complying with regulations, relevant Australian standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

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Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and

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the practical requirements of the workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- hazardous materials and substances
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - dirt mounds
  - electricity
  - excavation equipment and plant
  - hazardous materials
  - other machines

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- pits
- poles
- recently filled trenches
- surrounding structure and facilities
- traffic control
- trip hazards
- underground services
- uneven and unstable terrain
- work site visitors and the public
- working in confined spaces
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- use of tools and equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Quality assurance requirements may include:

- environment policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Legal point of discharge may be:

- gutter
- on-site storage tank or disposal pit
- stormwater drain or easement
- sub-soil distribution system or soak well.

Materials may include:

- unplasticised polyvinyl chloride (PVC-U), reinforced concrete, cast iron and vitreous clay pipes
- other approved materials.

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Sustainability principles and concepts:

- cover the social, economic and environmental use of resources to meet current and future needs
- may include:
  - correct handling of hazardous materials
  - disposing of waste material to ensure minimal environmental impact
  - efficient and legal point of water discharge
  - efficient energy and water use
  - efficient use and recycling of material
  - selecting appropriate components to ensure minimal environmental impact.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- compression cutters
- dropsaws
- files
- grinders
- hacksaws
- hand and power tools
- hand excavating tools
- levelling equipment
- measuring equipment
- mechanical excavating equipment
- testing equipment
- trench shoring equipment.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes

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  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to installing stormwater and sub-soil drainage systems
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPDR2025A Drain work site

Modification History

Prerequisite unit updated
Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPDR2015A

Unit Descriptor

This unit of competency specifies the outcomes required to remove water from a work site, either temporarily or permanently, through stormwater and sub-soil drainage systems. It includes the installation of submersible and non-submersible type pumps, suitable for pumping unscreened roof water, sub-soil water and surface water.

Application of the Unit

This unit of competency supports development of skills for draining work sites before and during plumbing work.
Site location for work application may be either domestic or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with draining a work site are adhered to throughout the work, including electrical safety.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	Tools and equipment, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient draining of the work site.
2	Identify installation requirements.	2.1	Proposed location of stormwater connection points, sumps, wells and ***pumps*** are determined from plans and specifications.
		2.2	Quantity and type of materials and equipment required are calculated from design drawings and specifications and comply with standards and local authorities' requirements.
		2.3	***Materials*** and equipment are identified, ordered and collected according to workplace procedures.
		2.4	Materials and equipment are checked for compliance with docket and order form, and for acceptable condition.

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		2.5	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
3	Prepare site.	3.1	Site is prepared to comply with plans and specifications, installation requirements and consideration for the location of existing services.
		3.2	Site is prepared according to plans and specifications, site requirements and standards, ensuring minimum damage to surrounding structures and environment.
		3.3	Sedimentation controls are constructed and positioned according to statutory requirements.
4	Install drainage equipment.	4.1	Sumps and/or wells are installed at specified levels and locations.
		4.2	Inlet and discharge points are prepared according to plans, specifications, manufacturer requirements and site-specific drainage requirements.
		4.3	Appropriate pumping equipment is positioned in specified suitable location.
		4.4	Pipework and/or hoses are connected and installed according to manufacturer requirements.
5	Operate drainage system.	5.1	Pumps are activated to lower water level to specifications.
		5.2	Pump control system is adjusted to meet specification requirements.
		5.3	Pumps are maintained according to manufacturer specifications and workplace requirements.
6	Clean up.	6.1	Ground area is restored, and work area is cleared and materials disposed of, reused or recycled according to legislation, regulation, codes of practice and job specification.
		6.2	***Tools and equipment*** are cleaned, checked, maintained and stored according to manufacturer recommendations

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and workplace procedures.

6.3 ***Information*** is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to complete workplace documentation
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to remove water from a work site, which may be a trench, pit or well, using a pump
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- characteristics of stormwater installations, including capacity and installation procedures
- excavation processes and procedures
- job safety analysis (JSA) and safe work method statements (SWMS)
- levelling and alignment processes
- positioning and construction of sedimentation and scouring controls
- principles of drainage and installation processes
- process of draining a site
- processes for accessing information and for calculating material requirements
- properties of water, including pressure and flow rates

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- relevant statutory and authorities' requirements related to draining work sites
- SI system of measurements
- standards applicable to the work
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to drain a work site
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, draining water from a pit, trench or excavation containing water to a depth of at least half a metre, using a submersible or non-submersible pump; the site must remain effectively drained for the duration of the job, ensuring:
    - application of sustainability principles and concepts
    - correct identification of location, design and details of proposed installation
    - correct selection and use of appropriate processes, tools and equipment
    - completing all work to specification
    - compliance with regulations, standards and organisational quality procedures and processes
    - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

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Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning

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experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- hazardous materials and substances
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - dangerous materials
  - dirt mounds
  - identifying and testing for electrical hazards
  - other machines
  - pits
  - plant and equipment

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- power poles
- recently filled trenches
- site drainage tools
- surrounding structure and facilities
- traffic control
- trees
- trip hazards
- underground services
- uneven and unstable terrain
- work site visitors and the public
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- use of tools and equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Quality assurance requirements may include:

- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Pumps:

- may include:
  - sludge pumps
  - submersible
  - surface
  - vacuum
- pump installation may be for temporary or permanent drainage.

Materials may include:

- fittings and jointing
- flexible pipes
- polymer
- other approved materials.

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Sustainability principles and concepts:

- cover the social, economic and environmental use of resources to meet current and future needs
- may include:
  - correct positioning and construction of sedimentation and scouring controls according to relevant authorities
  - correct disposal of discharge according to relevant authorities
  - recycling of discharge water where appropriate.

Tools and equipment may include:

- hand and power tools
- manual and mechanical excavation equipment
- measuring and levelling equipment
- pumps
- trench shoring equipment.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to the drainage of work sites
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

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Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPDR2026A Install prefabricated inspection openings and enclosures

Modification History

Prerequisite unit updated plus minor changes to unit
Not equivalent to CPCPDR2016A

Unit Descriptor

This unit of competency specifies the outcomes required to install prefabricated inspection openings and enclosures.

Application of the Unit

This unit of competency supports development of inspection access installation.
Site location for work application may be either domestic or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with installing prefabricated inspection openings and enclosures are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient installation of prefabricated inspection openings and enclosures.
2	Identify installation requirements.	2.1	Location of the installation is determined, according to plans, specifications and site requirements.
		2.2	Quantity and type of ***materials*** required are calculated from design drawings and specifications and comply with local authorities' requirements.
		2.3	Quantity and type of materials required are calculated from plans, drawings and specifications.
		2.4	Materials are ordered and checked for compliance with docket and order form, and for acceptable condition.

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3	Install prefabricated inspection openings and enclosures.	3.1	Site and location of the excavation are marked according to plans and specifications, ensuring existing services are not disturbed.
		3.2	Site is excavated and prepared for installation according to plans, specifications and regulatory authorities' requirements, with minimal damage to surrounding structures or the environment.
		3.3	Prefabricated inspection opening and enclosure are installed according to plans, specifications and regulatory authorities' requirements.
		3.4	***Sustainability principles and concepts*** are applied throughout the installation process.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	***Information*** is accessed and documentation completed according to workplace and regulatory authorities' requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to install a prefabricated inspection opening and enclosure in a drainage system, including the connection of inlet and outlet pipes
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- characteristics and application of pipe fittings and fixture supports, including fixing and jointing techniques
- excavation processes and procedures
- job safety analysis (JSA) and safe work method statements (SWMS)
- levelling and alignment processes

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- process of installing prefabricated inspection openings and enclosures
- relevant statutory and authorities' requirements related to installing prefabricated inspection openings and enclosures
- SI system of measurement
- sources of information and processes for calculating material requirements
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, Australian standards and specifications to set out, assemble, install and test prefabricated inspection openings and enclosures
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, installing an approved prefabricated inspection opening or enclosure, including the connection of the inlet and outlet pipes, ensuring:
  - application of sustainability principles and concepts
  - correct identification of location, design and details of proposed installation
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, relevant Australian standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

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Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning

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experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- hazardous materials and substances
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - dangerous materials
  - dirt mounds
  - electricity
  - other machines
  - recently filled trenches
  - surrounding structure and facilities
  - traffic control

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- trip hazards
- underground services
- use of tools, plant and equipment
- work site visitors and the public
- working in confined spaces
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Quality assurance requirements may include:

- environment policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:

- chain blocks
- forklifts
- hand and power tools
- hand excavation tools
- hand trolleys
- hoists and jacks
- levelling equipment
- lifting and load shifting equipment, which may also include mechanical excavation equipment
- measuring equipment
- rollers
- trench shoring equipment
- water testing equipment.

Materials may include:

- concrete or polymer prefabricated inspection openings and enclosures
- other approved materials.

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Sustainability principles and concepts:

- cover the social, economic and environmental use of resources to meet current and future needs
- may include:
  - efficient energy and water use
  - efficient use and recycling of material
  - correct handling of hazardous materials
  - disposing of waste material to ensure minimal environmental impact
  - selecting appropriate components to ensure minimal environmental impact.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to installing prefabricated inspection openings and enclosures
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

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Custom Content Section

Not applicable.

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CPCPDR3021A Plan layout of a residential sanitary drainage system

Modification History

Prerequisite unit updated plus minor changes to unit
Not equivalent to CPCPDR3011A

Unit Descriptor

This unit of competency specifies the outcomes required to plan the layout of sanitary drainage systems for residential buildings.

Application of the Unit

This unit of competency supports development of planning skills for sanitary systems.
Site location for application of the design will be domestic, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	***Information***, plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with planning the layout of sanitary drainage systems are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient planning of sanitary drainage systems' layouts.
2	Plan system layout.	2.1	Site inspection is undertaken to determine job requirements.
		2.2	Quantity, location and type of fixtures are determined from design drawings, plans and elevations.
		2.3	Layout of sanitary drainage system is planned according to plans and relevant Australian standards.
		2.4	***Sustainability principles and concepts*** are applied to the plan.
		2.5	***Materials*** and ***fixtures*** required are determined from the proposed design.

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		2.6	Plans are recorded according to workplace requirements.
3	Clean up.	3.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		3.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		3.3	Information is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - confirm job specifications and client requirements
  - communicate with others to ensure safe and effective work practices
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to interpret a design to plan the layout of a sanitary drainage system for residential buildings, connecting to the authority's sewer or on-site disposal system
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- application of various sanitary fixtures and appliances
- characteristics and application of different pipe systems, including their fittings and fixture supports and fixing and joining techniques
- design concepts and performance measures for sanitary drainage installations
- job safety analysis (JSA) and safe work method statements (SWMS)
- principles of drainage design
- process of planning the layout of sanitary drainage systems
- properties and characteristics of sewage, including temperature implications and

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discharges
- pumped discharges
- relevant statutory requirements related to sanitary drainage systems
- SI system of measurements
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, Australian standards and specifications to planning the layout of a sanitary drainage system for a residential type building
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, planning the layout of a sanitary drainage system for a two-storey building requiring connection of five points, including a stack from the second floor to an approved point of discharge, or on-site disposal system, ensuring:
  - application of sustainability principles and concepts when planning the layout of a residential draining system
  - correct identification of details of proposed layout
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, relevant Australian standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources

This competency is to be assessed using standard and

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for assessment

authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace

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- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information may include:

- charts and hand drawings
- diagrams, sketches and graphics
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- maps
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements

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- plumbing regulations
- relevant Australian standards
- safe work procedures relating to the design of sanitary drainage systems
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Workplace health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - dangerous materials and hazardous substances
  - electricity
  - services
  - surrounding structure and facilities
  - trip hazards
  - work site visitors and the public
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- use of tools and equipment
- workplace environment and safety.

Environmental requirements may include:

- clean-up protection
- waste management.

Quality assurance requirements may include:

- environment policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

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Tools and equipment may include:

- approved testing equipment
- chain blocks
- forklifts
- hand and power tools
- hand excavation tools
- hand trolleys
- hoists and jacks
- levelling equipment
- lifting and load shifting equipment
- measuring equipment
- mechanical excavation equipment
- rollers
- trench shoring equipment.

Sustainability principles and concepts:

- cover the social, economic and environmental use of resources to meet current and future needs
- may include:
  - efficient energy and water use
  - efficient use and recycling of material
  - correct handling of hazardous materials
  - disposing of waste material to ensure minimal environmental impact
  - selecting appropriate components to ensure minimal environmental impact.

Materials may include:

- drawing instruments
- measuring equipment and plans, including building plans
- sanitary plans and drainage plans.

Fixtures may include:

- all approved residential fixtures in AS/NZS3500 National plumbing and drainage.

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Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPDR3022A Install below ground sanitary drainage systems

Modification History

Prerequisite unit updated
Changes to descriptor, performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPDR3012A

Unit Descriptor

This unit of competency specifies the outcomes required to install below ground sanitary drainage systems for sewage and waste discharge from sanitary fixtures to the authorities' approved point of connection.

Application of the Unit

Site location for work application may be either domestic or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with installing sanitary drainage systems are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Location of underground services is identified.
		1.7	Work area is prepared to support efficient installation of sanitary drainage systems.
2	Identify installation requirements.	2.1	Quantity and type of ***materials*** required are calculated from existing installations, plans, specifications and site inspections.
		2.2	Allowances for fabrication and assembly are correctly determined and transferred.
		2.3	Materials and equipment are identified, ordered and collected according to workplace procedures.
		2.4	Materials and equipment are checked for compliance with standards, docket and order form, and for acceptable condition.

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		2.5	***Sustainability principles and concepts*** are applied throughout the installation process.
3	Install sanitary drainage systems.	3.1	Pipework is set out according to plans and specifications, site requirements or job instructions, with consideration given to the location of existing services and the ***authority's approved point of connection***.
		3.2	Pipework is installed according to plans, specifications, standards and workplace procedures and without damage to surrounding environment, existing pipework or other services.
		3.3	Connections for alterations, additions or repairs to existing systems are made according to standards and manufacturer specifications.
		3.4	Installation is checked for compliance with design drawings, specifications, site requirements, standards and authorities' requirements.
		3.5	Installation is ***tested*** to comply with standards and relevant authorities' requirements.
4	Clean up.	4.1	Installation is backfilled according to standards, and work area is cleared and materials disposed of, reused or recycled according to legislation, regulation, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	***Information*** is accessed and documentation completed according to regulatory authorities and workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - plans and specifications
    - documentation from a variety of sources
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
  - install and test below ground sanitary drains
  - transfer sewage from sanitary fixtures to a sewage authority's point
  - make alterations to existing sanitary drainage
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- characteristics and application of different pipe fittings and fixture supports, including fixing and joining techniques

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- excavation processes and procedures
- hazardous materials
- job safety analysis (JSA) and safe work method statements (SWMS)
- levelling and alignment processes
- materials relevant to sanitary drainage
- principles of drainage design
- process of installing and testing sanitary drains
- relevant statutory and authority requirements related to installing and fitting off sanitary fixtures
- SI system of measurements
- sources of information and processes for calculating material requirements
- standards applicable to the installation
- water and air test systems and procedures
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to install and test sanitary drainage systems
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, installing and testing a below ground sanitary drain to connect a bathroom, WC, kitchen, laundry and soil or waste stack (to a minimum of 30 fixture units), where the drain is to be at least 10 metres long and terminate at ground level
- cutting in a branch to connect a new water closet and fixture, ensuring:
  - application of sustainability principles and concepts
  - correct identification of location, design and details of the proposed installation
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources

This competency is to be assessed using standard and

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for assessment

authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace

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- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- hazardous materials and substances
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - identifying and testing for electrical hazards
  - dirt mounds
  - other machines
  - recently filled trenches
  - services
  - surrounding structure and facilities

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- traffic control
- trench support
- trees and roots
- trip hazards
- uneven and unstable terrain
- work site visitors and the public
- working in confined spaces
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- use of tools and equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Quality assurance requirements may include:

- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:

- bending equipment
- chain blocks
- compression cutters
- dropsaws
- forklifts
- grinders
- hacksaws
- hand and power tools
- hand excavation tools
- hand trolleys
- heating equipment
- hoists and jacks
- levelling equipment and threading
- lifting and load shifting equipment
- measuring equipment
- mechanical excavation equipment

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- pipe relining equipment
- rollers
- trench shoring equipment.

Materials may include:

- fixtures, which may include all approved residential fixtures as identified in AS/NZS3500 National plumbing and drainage
- polymer pipes and fittings
- other approved materials.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient use of material
  - efficient use of water
  - selecting appropriate components and material to ensure minimal environmental impact
  - consideration given to relocation of excess soil.

Authority's approved point of connection may include:

- boundary traps
- non-boundary traps
- on-site treatment plant.

Testing may include:

- air, water or vacuum testing.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job plans
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations

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- relevant Australian standards
- safe work procedures relating to installing sanitary drainage systems
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPDR3023A Install on-site disposal systems

Modification History

Prerequisite unit updated plus minor changes to unit
Not equivalent to CPCPDR3013A

Unit Descriptor

This unit of competency specifies the outcomes required to install an on-site effluent disposal system from a domestic treatment plant.

Application of the Unit

Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with the installation of on-site disposal systems are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient installation of the on-site disposal system.
2	Identify work requirements.	2.1	Position of on-site disposal system is determined according to plans, specifications, authorities' requirements and relevant Australian standards.
		2.2	Quantity and type of ***materials*** required are calculated from design drawings and specifications in compliance with relevant Australian standards and local authorities' requirements.
		2.3	Materials are identified, ordered and collected according to workplace procedures.
		2.4	Materials are checked for compliance with docket and order form, and for acceptable condition.
3	Install on-site disposal system.	3.1	Set out is checked for compliance with plans, specifications and authorities' requirements.
		3.2	Underground services within excavation area are identified and marked.
		3.3	Site is excavated according to requirements for system, plans, permits and site requirements, ensuring minimum damage to surrounding structures or environment.

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		3.4	***On-site effluent disposal*** system is installed according to plans, specifications, relevant Australian standards and regulatory requirements.
		3.5	***Sustainability principles and concepts*** are applied throughout the installation process.
		3.6	System is checked for compliance with relevant Australian standards and regulatory authorities' requirements and correct operation.
4	Clean up.	4.1	Excavation is backfilled to specifications, work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	***Information*** is accessed and documentation completed according to responsible authority and workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to install perforated pipe in an absorption trench to act as an on-site effluent disposal system from a septic sewerage tank
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- Australian standards applicable to the installation
- characteristics and application of different pipe fittings and fixture supports, including fixing and joining techniques
- excavation processes and procedures
- job safety analysis (JSA) and safe work method statements (SWMS)

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- levelling and alignment processes
- principles and techniques of effluent treatment and disposal
- principles of drainage design
- processes for accessing information and for calculating material requirements
- regulations and requirements of regulatory authorities regarding effluent disposal and the installation of on-site disposal systems
- SI system of measurements
- soil testing requirements and procedures
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, Australian standards and specifications to install on-site disposal systems
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, determining the requirements for installing:
  - a transpiration or an absorption trench, with the trench being at least three metres in length, running from a distribution pit or outlet of a domestic treatment plant; or a surface or sub-surface irrigation on-site disposal system, ensuring:
    - application of sustainability principles and concepts throughout the installation of on-site disposal systems
    - correct identification of location, design and details of proposed installation
    - correct selection and use of appropriate processes, tools and equipment
    - completing all work to specification
    - compliance with regulations, relevant Australian standards and organisational quality procedures and processes
    - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and

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environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning

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experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- hazardous materials and substances
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - excavation and installation tools and equipment
  - hazardous materials
  - other machines
  - recently filled trenches
  - services
  - surrounding structure and facilities

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- traffic control
- trip hazards
- work site visitors and the public
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Quality assurance requirements may include:

- environment policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:

- hand and power tools
- levelling equipment
- manual and mechanical excavation equipment
- measuring equipment.

Materials may include:

- aggregates
- geotextiles or other approved materials
- perforated pipes
- piping
- sprinklers and fittings.

On-site effluent disposal may include:

- absorption
- absorption and transpiration
- absorption and transpiration bed
- domestic treatment plants, including domestic treatment plant or simulated receptacle
- mound system
- irrigation system.

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Sustainability principles and concepts:

- cover the social, economic and environmental use of resources to meet current and future needs
- may include:
  - efficient energy and water use
  - efficient use and recycling of material
  - correct handling of hazardous materials
  - disposing waste material to ensure minimal environmental impact
  - selecting appropriate components to ensure minimal environmental impact.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
  - relevant Australian standards
- safe work procedures relating to installing on-site disposal systems
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Functional area

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Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPDR4011B Design and size sanitary drainage systems

Modification History

Minor editorial changes to performance criteria, required skills and knowledge, range statement and critical aspects
Equivalent to CPCPDR4011A

Unit Descriptor

This unit of competency specifies the outcomes required to design, size and document the layout of sanitary drainage systems for unit developments.
It covers the preparation for the work, the identification and confirmation of system specifications and requirements, the planning of the system layout, and work finalisation processes, including records and documentation.

Application of the Unit

Site location for application of the plan will be residential and commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for planning.	1.1	Nature and scope of planning task are identified and confirmed.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with the installation of sanitary drainage systems are adhered to throughout the work.
		1.3	Work is organised and sequenced in conjunction with others involved in or affected by work.
		1.4	***Tools and equipment*** required for planning, sizing and documenting the layout of sanitary drainage systems, including personal protective equipment, are selected and checked for serviceability.
		1.5	Work area in which the planning process is to be conducted is prepared.
2	Identify system requirements.	2.1	***Information*** and specifications for the required work are obtained and confirmed, if necessary by site inspection.
		2.2	Regulations and Australian standards relevant to the work are consulted and applied to all aspects of the work.
		2.3	Quantity, location and type of take-off points and ***legal points of discharge*** are determined from development drawings, plans and specifications.
		2.4	System is sized according to relevant Australian standards and ***statutory and regulatory authorities'*** and workplace requirements.
		2.5	***Sustainability principles and concepts*** are observed

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			when preparing for and undertaking work process.
3	Design system layout.	3.1	Sanitary drainage system is designed according to development plans, specifications, relevant Australian standards and workplace procedures.
		3.2	***Materials*** required are specified and optimised from proposed design according to relevant Australian standards.
		3.3	Plans are recorded according to regulatory authorities' and workplace requirements.
4	Restore work area.	4.1	Work area is restored according to workplace procedures.
		4.2	Tools and equipment used in the process are refurbished and left according to workplace procedures.
		4.3	Information is accessed and documentation, including work backup, is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - identify requirements, including system requirements
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation, including recording written plans and completing other relevant workplace documentation, such as work backups
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
    - regulations and relevant Australian standards
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - organise and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to interpret plans and specifications of a multi-unit development to plan, size and document layout of required sanitary drainage system
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- Australian standards applicable to sanitary drainage systems
- characteristics and application of different pipe systems, including their fittings and fixture supports and fixing and joining techniques

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- computer use, including computer-aided design software for plumbing and construction systems
- design concepts and performance measures for sanitary drainage systems
- handling of hazardous waste
- how to find and access necessary specifications and related information
- infectious diseases relevant to working with plumbing systems
- job safety analysis (JSA) and safe work method statements (SWMS)
- principles of drainage
- process of planning, sizing and documenting layout of sanitary drainage systems
- process of treating trade waste to acceptable levels for discharge
- properties and characteristics of sewage, including temperature implications, trade waste requirements and discharge levels
- relevant statutory requirements related to planning, sizing and documenting sanitary drainage systems
- SI system of measurements
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, Australian standards and specifications to planning, sizing and documenting the layout of a sanitary drainage system
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the development plans and specification, designing, sizing and documenting the layout details of a sanitary drainage system for a residential unit development comprising at least five two-storey (Class 1) units; and a commercial (Class 6) building, incorporating trade waste to an approved point of discharge or on-site disposal system, ensuring:
  - application of sustainability principles and concepts
  - correct identification of details of the plan
  - correct selection and use of appropriate processes, tools and equipment
  - completion of all work to specification
  - compliance with regulations, relevant Australian standards, and organisational quality procedures and processes
  - correct identification of trade waste and appropriate treatment processes
  - communicating and working effectively and safely with others.

Context of and specific

This competency is to be assessed using standard and

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resources for assessment

authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning

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experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Workplace health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- hazardous materials and substances
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - other machines
  - surrounding structure and facilities
  - trip hazards
  - underground services
  - use of tools and equipment
  - work site visitors and the public
  - working at heights

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- working in confined spaces
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Tools and equipment may include:

- computer-aided design (CAD) software
- drawing instruments
- measuring equipment.

Information may include:

- charts and hand drawings
- job drawings
- material safety data sheets (MSDS)
- memos
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - National Construction Code
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards, including AS/NZS3500 National plumbing and drainage: Part 2 Sanitary plumbing and drainage – Acceptable solutions
- safe work procedures relating to planning, sizing and documenting the layout of sanitary drainage systems
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Legal points of discharge may include:

- gravitational sewer
- on-site disposal system
- vacuum sewer.

Statutory and regulatory

- commonwealth, state or territory, and local authorities

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authorities include: administering applicable Acts, regulations and codes of practice.

Sustainability principles and concepts:

- cover the social, economic and environmental use of resources to meet current and future needs
- may include:
  - correctly handling hazardous materials
  - incorporating efficient use of material into the design, including recycling material
  - using efficient design principles throughout to minimal environmental impact
  - using energy and water efficiently.

Materials may include:

- drafting materials
- relevant development plans and specifications.

Unit Sector(s)

Competency field Drainage

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPDR4012B Design and size stormwater drainage systems

Modification History

Minor editorial changes to performance criteria, required skills and knowledge, range statement and critical aspects
Equivalent to CPCPDR4012A

Unit Descriptor

This unit of competency specifies the outcomes required to design, size and document the layout of surface and sub-soil stormwater drainage systems up to legal points of discharge. It covers the preparation for the planning, identification and confirmation of system specifications and requirements, the planning of the system layout and work finalisation processes, including records and documentation.

Application of the Unit

Site location for application of the plan will be residential and commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for planning.	1.1	Nature and scope of the planning task are identified and confirmed.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with installation of ***stormwater drainage systems*** are adhered to throughout the work.
		1.3	Work is organised and sequenced in conjunction with others involved in or affected by the work.
		1.4	***Tools and equipment*** required for planning, sizing and documenting the layout of stormwater drainage systems, including personal protective equipment, are selected and checked for serviceability.
		1.5	Work area in which planning process is to be conducted is prepared.
2	Identify system requirements.	2.1	***Information*** and specifications for required work are obtained and confirmed, if necessary by site inspection.
		2.2	Regulations and Australian standards relevant to the work are consulted and applied to all aspects of the work.
		2.3	Design criteria are determined from relevant Australian standards and proposed method of installation.
		2.4	Stormwater catchment and flow requirements are identified.
		2.5	Stormwater pipe size is determined to conform to regulatory authorities' main or street kerb and relevant Australian standards.

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		2.6	Stormwater retention pit size, silt and flotation arrestor pit size, rainwater tank size and stormwater overflow discharge locations are determined to suit job requirements.
		2.7	System type is selected to suit collection and disposal requirements.
		2.8	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
3	Design system layout.	3.1	Layout of stormwater drainage system is planned according to plans, specifications, relevant Australian standards and workplace procedures.
		3.2	Stormwater disposal system is specified according to job requirements.
		3.3	***Materials*** required are specified and optimised from proposed design according to relevant Australian standards.
		3.4	Plans are recorded according to ***statutory and regulatory authorities'*** and workplace requirements.
4	Restore work area.	4.1	Work area is restored according to workplace procedures.
		4.2	Tools and equipment used in the process are refurbished and left according to workplace procedures.
		4.3	Information is accessed and documentation, including work backup, is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - identify requirements, including system requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
    - regulations and relevant Australian standards
  - record written plans and complete other relevant workplace documentation, including work backups
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - organise and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to interpret plans and specifications to plan, size and document the layout of a surface and sub-soil stormwater drainage system, incorporating downpipes, pits, tanks and overflow discharge
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

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- Australian standards applicable to stormwater drainage systems
- catchment, rainfall intensity and run-off calculations
- characteristics and application of different pipe systems, including their fittings and fixture supports and fixing and joining techniques
- design concepts and performance measures for stormwater and sub-soil drainage systems
- determining levels
- job safety analysis (JSA) and safe work method statements (SWMS)
- principles of water flow and stormwater and sub-soil drainage
- process of planning, sizing and documenting the layout of stormwater and sub-soil drainage systems using relevant sources of information
- relevant statutory requirements related to planning, sizing and documenting stormwater and sub-soil drainage systems
- SI system of measurements
- stormwater installation techniques
- use of computers and relevant computer-aided design (CAD) software
- water tank installation
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, Australian standards and specifications to planning, sizing and documenting the layout of a stormwater drainage system
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the development plans and specification, designing, sizing and documenting the layout details of a surface and sub-soil stormwater drainage system for a residential unit development comprising at least five two-storey (Class 1) units; and a commercial (Class 6) building, which includes drainage to the legal point of discharge to the external stormwater drainage network, ensuring:
  - application of sustainability principles and concepts
  - correct identification of plan details
  - correct selection and use of appropriate processes, tools and equipment
  - completion of all work to specification
  - compliance with regulations, relevant Australian standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

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Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and

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separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- hazardous materials and substances
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - other machines
  - surrounding structure and facilities
  - trip hazards
  - underground services
  - use of tools and equipment
  - work site visitors and the public
  - working at heights
  - working in confined spaces

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- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Stormwater drainage systems will:

- be gravity, pumped and displacement operated
- terminate at point of connection with external stormwater drainage network, including:
  - disposal pit
  - easement
  - gutter
  - on-site storage tank
  - stormwater drain
  - sub-soil disposal system.

Tools and equipment may include:

- CAD software
- drawing instruments
- ladders
- laser measuring devices
- measuring equipment.

Information relating to stormwater disposal plans may include:

- authority mains or kerb
- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- maximum discharge rates allowed
- memos
- plans and sketches
- organisation work specifications and requirements
- possible locations of stormwater components
- regulatory and legislative requirements, particularly those pertaining to:

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- National Construction Code
- WHS and environmental requirements
- plumbing regulations
- relevant Australian standards, including AS/NZS3500 National plumbing and drainage: Part 3 Stormwater drainage
- safe work procedures relating to planning, sizing and documenting the layout of stormwater drainage systems
- signage
- site relative levels
- stormwater flow rates
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Sustainability principles and concepts:

- cover the social, economic and environmental use of resources to meet current and future needs
- may include:
  - correctly handling hazardous materials
  - disposing of waste material to ensure minimal environmental impact
  - harvesting rainwater
  - incorporating efficient use of material into the design, including recycling material
  - preventing environmental contamination
  - using efficient design principles throughout to minimal environmental impact
  - using energy and water efficiently.

Materials may include:

- drafting and drawing materials
- relevant plans and specifications.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering application Acts, regulations and codes of practice.

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Unit Sector(s)

Competency field Drainage

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPDR4013B Design and size domestic treatment plant disposal systems

Modification History

Minor editorial changes to performance criteria, required skills and knowledge, range statement and critical aspects
Equivalent to CPCPDR4013A

Unit Descriptor

This unit of competency specifies the outcomes required to design, size and document the layout of domestic treatment plant disposal systems.
It covers preparation for the planning, identification and confirmation of system specifications and requirements, and the planning of the system layout and work finalisation processes, including records and documentation.

Application of the Unit

Site location for work application will be domestic, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for planning.	1.1	Nature and ***scope of planning task*** are identified and confirmed.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with installation of domestic treatment plant disposal systems are adhered to throughout the work.
		1.3	Work is organised and sequenced in conjunction with others involved in or affected by the work.
		1.4	***Tools and equipment*** required for planning, sizing and documenting layout of domestic treatment plant disposal systems, including personal protective equipment, are selected and checked for serviceability.
		1.5	Work area in which the planning process is to be conducted is prepared.
2	Identify system requirements.	2.1	***Information*** and specifications for required work are obtained and confirmed, if necessary, by site inspection.
		2.2	Regulations and Australian standards relevant to work are consulted and applied to all aspects of the work.
		2.3	System requirements, including capacity, method of disposal, types of system, treatment system performance requirements and processes are determined from specifications.
		2.4	Information on the assessment of land capability for on-site land application of effluent are obtained and confirmed.

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		2.5	Information for a suitable location for the land application area and reserve area is obtained and confirmed.
		2.6	System is sized according to relevant Australian standards, regulatory authorities and workplace requirements.
3	Design system layout.	3.1	Disposal system is planned according to specifications, Environment Protection Authority (EPA) and regulatory authorities' requirements, relevant Australian standards and workplace procedures.
		3.2	Plans are developed to accord with relevant Australian standards, regulatory authorities' requirements, maintenance, site topography and landscape application areas.
		3.3	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
		3.4	***Materials*** required are specified and optimised according to relevant Australian standards from proposed design.
		3.5	Plans are recorded according to ***statutory and regulatory authorities'*** and workplace requirements.
4	Restore work area.	4.1	Work area is restored according to workplace procedures.
		4.2	Tools and equipment used in the process are refurbished and left according to workplace procedures.
		4.3	Information is accessed and documentation, including work backup, is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - identify requirements, including system requirements
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete relevant workplace documentation, including work backups
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
    - regulations and relevant Australian standards
  - record written plans
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - organise and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to interpret plans and specifications to design layout and operational details of a domestic treatment plant disposal system
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- Australian standards applicable to the treatment system
- design concepts and performance measures for domestic treatment plant disposal systems

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- handling of hazardous waste
- infectious diseases
- job safety analysis (JSA) and safe work method statements (SWMS)
- principles of the assessment of land capability for application of effluent
- principles, techniques and characteristics of effluent treatment and disposal
- process of designing domestic treatment plant disposal systems
- properties and characteristics of landscape application areas with suitable plants and vegetation, including:
  - hardiness
  - high and low water requirements
  - maintenance requirements
  - native to the local area implications
  - phosphorus tolerance
- properties and characteristics of soil, including:
  - percentages of sand, silt and clay
  - absorption capacity implications
- relevant statutory and authorities' requirements related to designing domestic treatment plant disposal systems
- SI system of measurements
- sources of information
- use of computers and relevant computer-aided design (CAD) software
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, Australian standards and specifications to the design of domestic treatment plant disposal systems
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the development plans and specification, designing, sizing and documenting the layout of a treatment system for a domestic dwelling, which is compliant with current and relevant environmental and legislative requirements, ensuring:
    - identification, evaluation and incorporation of sustainability principles and concepts into the design
    - correct identification of plan details
    - correct selection and use of appropriate processes, tools and equipment
    - completion of all work to specification
    - compliance with regulations, relevant Australian standards and organisational quality procedures and processes
    - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and

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environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace

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- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Scope of planning task:

- absorption may be by absorption trenches or transpiration beds
- disposal may be by absorption, spray or recycling
- process may be anaerobic or aerobic.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity

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- hazardous materials and substances
  - other machines
  - surrounding structure and facilities
  - trip hazards
  - underground services
  - use of tools and equipment
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Tools and equipment may include:

- CAD software
- drawing instruments
- measuring equipment.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - National Construction Code
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards, including:
  - AS/NZS3500 National plumbing and drainage: Part 2 Sanitary plumbing and drainage
  - AS/NZ1547 On-site domestic wastewater

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management
- safe work procedures relating to the design of domestic treatment plant disposal systems
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Sustainability principles and concepts:
- cover the social, economic and environmental use of resources to meet current and future needs
- may include:
  - efficient design principles used throughout to minimal environmental impact
  - no environmental contamination
  - efficient use of material incorporated into the design, including recycling of material
  - efficient energy and water use
  - correct handling of hazardous materials
  - disposing of waste material to ensure minimal environmental impact.

Materials may include:
- drafting materials
- relevant plans and specifications.

Statutory and regulatory authorities include:
- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPFS2021A Connect static storage tanks for fixed fire protection systems

Modification History

Prerequisite unit updated
Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPFS2011A

Unit Descriptor

This unit of competency specifies the outcomes required to connect static storage tanks to fixed fire protection systems.

Application of the Unit

This unit of competency supports development of skills for connecting storage tanks to water services.
Site location for work application may be either domestic or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications are obtained.
		1.2	***Workplace health and safety*** (WHS) and ***environmental requirements*** associated with connection of static storage tanks are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	***Tools and equipment*** for connecting static storage tanks, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient connection of static storage tanks.
2	Identify installation requirements.	2.1	***Materials*** required for the installation are determined from plans and specification.
		2.2	Materials are selected that comply with standards and job specifications.
		2.3	Quantities of materials required are calculated from plans.
		2.4	Materials and equipment are identified, ordered and collected according to workplace procedures.
		2.5	Materials and equipment are checked for compliance with standards, docket and order form, and for acceptable condition.

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3	Install and test storage tank.	3.1	Storage tank and associated pipework are set out according to plans, specifications and job instructions.
		3.2	Pipe supports and fixings, compliant with standards, are installed to plans and manufacturer specifications.
		3.3	Tank, piping and materials are installed according to plans, specifications and standards.
		3.4	Jointing systems are compliant with standards.
		3.5	Installed system is subjected to pressure testing according to standards or job specification.
		3.6	Test data is recorded in format required by job specifications and quality assurance procedures.
		3.7	Installation is backfilled according to specifications.
		3.8	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	***Information*** is accessed and documentation completed according to regulatory authorities and workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow and give instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - plans and specifications
    - documentation from a variety of sources
  - record test results in writing
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to determine system requirements, and install and test a water distribution system from a static storage tank to a fire protection system
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- characteristics and application of different pipe fittings and fixture supports, including fixing and joining techniques
- excavation processes and procedures
- function and operation of a range of taps and valves

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- job safety analysis (JSA) and safe work method statements (SWMS)
- levelling and alignment processes
- operation and components of fire sprinkler systems
- pressure test systems and procedures
- process of connecting static storage tanks
- processes for accessing information and for calculating material requirements
- relevant statutory and authorities' requirements related to connecting static storage tanks
- SI system of measurement
- structural systems, building materials and building services
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to connect static storage tanks
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- relating the connection of static storage tanks to backflow protection competencies
- given the plans and specifications of a fire protection system, connecting and testing an approved static storage tank to a water distribution pipe system, ensuring:
  - application of sustainability principles and concepts
  - correct identification of requirements, design and details of the proposed installation
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

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Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning

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experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of tools and equipment
  - work site visitors and the public

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- working at heights
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Quality assurance requirements may include:

- Australian standards
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:

- chain blocks
- cutting and threading equipment
- elevated work platforms
- forklifts
- hand and mechanical excavation equipment
- hand and power tools
- hand trolleys
- hoists and jacks
- ladders
- lifting and load shifting equipment
- rollers
- scaffolds
- testing equipment
- trench shoring equipment
- welding equipment.

Materials may include:

- copper, brass, polymer or cement-lined cast iron pipes
- fibre glass, steel or polymer storage tanks
- galvanised and black steel pipes
- other approved pipes and materials.

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Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - selecting appropriate material to ensure minimal environmental impact
  - efficient use of material
  - efficient energy usage
  - water usage
  - evaporation
  - silting of tank.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to connecting static storage tanks
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

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Custom Content Section

Not applicable.

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CPCPFS2022A Install portable fire equipment

Modification History

Prerequisite unit updated
Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPFS2012A

Unit Descriptor

This unit of competency specifies the outcomes required to install portable fire extinguishers, fire blankets and signage.

Application of the Unit

Site location for work application may be either domestic or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with the installation of portable fire equipment are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	***Tools and equipment*** for installing portable fire equipment, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient installation of portable fire equipment.
2	Identify installation requirements.	2.1	Portable fire extinguisher requirements, including ***extinguishing agents*** and ***materials***, are identified from job design criteria and specifications.
		2.2	Portable fire equipment is ordered and collected according to workplace procedures.
		2.3	Portable fire equipment is checked for compliance with standards, docket and order form, and for acceptable condition.
		2.4	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
3	Install portable fire equipment.	3.1	Portable fire equipment is installed and commissioned to authorities' requirements, and plans and specifications.
		3.2	Supports, fixings and signage are installed according to plans, specifications and manufacturer instructions.

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4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	***Information*** is accessed and documentation completed according to regulatory authorities and workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow and give instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - record test results in writing
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
  - determine requirements and install fire extinguishers, fire blankets and signage
  - install fixing to a range of building surfaces
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- job safety analysis (JSA) and safe work method statements (SWMS)
- process of installing and commissioning portable fire extinguishers
- deemed-to-satisfy provision of the National Construction Code (NCC) for extinguishers

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- selection, location, installation and commissioning requirements, including travel distance for portable fire extinguishers and fire blankets as recommended in AS2444 Portable fire extinguishers and fire blankets –selection and location
- relevant statutory and authorities' requirements related to installing portable fire equipment
- SI system of measurement
- structural systems, building materials and building services
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to install portable fire equipment
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications for an office complex requiring the installation and commission of water, carbon dioxide (CO2) and powder portable fire extinguishers, fire blankets and signage, installing the appliances, ensuring:
  - application of sustainability principles and concepts
  - correct identification of requirement, location and installation of the extinguishers
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will

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usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a

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number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of tools and equipment
  - work site visitors and the public
  - working at heights

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- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- waste management.

Quality assurance requirements may include:

- Australian standards
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:

- hand and power tools.

Extinguishing agents for portable fire extinguishers may include:

- carbon dioxide gases
- dry chemical and chemical reaction suppression systems
- foam.

Materials may include:

- portable fire extinguishers
- supports and brackets.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient use of material
  - efficient energy retention
  - reusing waste water
  - selecting appropriate components to ensure minimal environmental impact.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel

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- manufacturer specifications and instructions
- maps
- material safety data sheets (MSDS)
- memos
- National Fire Protection Association (NFPA) and Factory Mutual performance-based codes of practice
- organisation work specifications and requirements
- plans, sketches and graphics
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to installing portable fire equipment
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPFS3030A Design pre-calculated fire sprinkler systems

Modification History

Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPFS3010A

Unit Descriptor

This unit of competency specifies the outcomes required to design fire sprinkler systems using pre-calculated tables and charts.

Application of the Unit

Work will normally be performed in a design office environment. The design application may be either domestic or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	Prepare for work.	1.1	Drawings and job specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with design and installation of fire sprinkler systems areadhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	***Tools, equipment*** and ***materials*** for the design of fire sprinkler systems, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient design of fire sprinkler systems.
2	Identify design requirements.	2.1	Relevant data is extracted from job specifications.
		2.2	Building classification and hazard ratings are established according to standards and other relevant regulations.
		2.3	Water supply needs are established and graphs are drawn for the automatic fire sprinkler system.
3	Design sprinkler system.	3.1	Sprinkler system is designed according to job specifications, standards, manufacturer recommendations and water supply data.
		3.2	Pipework is sized to manufacturer specifications, standards and pre-calculated tables.
		3.3	Sprinkler heads are selected for appropriate size, spray pattern, temperature and finish.
		3.4	Sprinklers are spaced according to manufacturer specifications, standards and relevant regulations.
		3.5	Pipe layout drawings are prepared according to standards and workplace requirements.

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		3.6	Computations and other supporting evidence are appropriately documented to support design.
		3.7	Fabrication sheets and material lists are prepared.
		3.8	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	***Information*** is accessed and documentation completed according to regulatory authorities and workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow and give instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- literacy skills to:
  - document computations and other supporting evidence
  - prepare fabrication sheets, material lists and other relevant workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
  - collect design data, space sprinkler heads, size pipework using charts and tables, and arrange pipework
  - prepare layout drawings, fabrication sheets and material lists for the installation of the system
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

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- function, specifications and operation of system components
- job safety analysis (JSA) and safe work method statements (SWMS)
- National Fire Protection Association (NFPA) and Factory Mutual performance-based codes of practice
- process of designing fire sprinkler systems using pre-calculated charts and tables
- properties of water, including pressure and flow rates
- relevant statutory and authority requirements related to designing and installing fire sprinkler systems
- SI system of measurement
- sources of information on performance characteristics of fire sprinkler systems, including theory underpinning pre-calculated charts and tables, and hydraulic calculations
- structural systems, building materials and building services
- technologies for fire sprinkler systems, measurements and drawings
- workplace design standards and safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to test and maintain automatic fire sprinklers
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications for an office complex (requiring at least 15 sprinkler heads and two branches), using pre-calculated charts and tables, design a fire sprinkler system indicating the spacing of sprinkler heads, the size and arrangement of pipework to include layout drawings, fabrication sheets and material lists, ensuring:
    - application of sustainability principles and concepts
    - correct identification of the requirement, design and details of the proposed system
    - correct selection and use of appropriate processes, tools and equipment
    - completing all work to specification
    - compliance with regulations, standards and organisational quality procedures and processes
    - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will

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usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and

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practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control, including of electrical hazards
- hazardous materials and substances
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- use of firefighting equipment
- use of first aid equipment
- use of tools and equipment
- workplace environment and safety.

Environmental requirements may include:

- clean-up protection
- waste management.

Quality assurance requirements

- Australian standards

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may include:

- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:

- calculator
- computer design software
- design data
- design tables
- drawing and drafting equipment
- reference materials.

Materials may include:

- drafting materials
- plans.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient energy usage
  - efficient use of material
  - selecting appropriate components (sprinkler head, pump, etc.) to ensure minimal environmental impact.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- NFPA and Factory Mutual performance-based codes of practice
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements

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- plumbing regulations
- relevant Australian standards
- safe work procedures relating to designing fire sprinkler systems
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPFS3031A Fabricate and install fire hydrant and hose reel systems

Modification History

Prerequisite unit updated
Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPFS3011A

Unit Descriptor

This unit of competency specifies the outcomes required to fabricate and install fire hydrant and hose reel systems.

Application of the Unit

Site location for work application may be either domestic or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Design drawings and job specifications are obtained from relevant authority.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with fabricating and installing fire hydrant and hose reel systems are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	***Tools and equipment*** for fabricating and installing fire hydrant and hose reel systems, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient fabrication and installation of fire hydrant and hose reel systems.
2	Identify installation requirements.	2.1	System requirements are identified from job design criteria, specifications and standards.
		2.2	Piping and materials are selected according to standards, design drawings, job specifications and authorities' requirements.
		2.3	Below ground piping and materials are checked to ensure compliance with standards and authorities' requirements.
		2.4	Required materials and equipment are identified, ordered

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			and collected according to workplace procedures.
		2.5	Materials and equipment are checked for compliance with standards, docket and order form, and for acceptable condition.
3	Fabricate, install and test system.	3.1	System is set out according to plans, specifications and job instructions.
		3.2	Pipe supports and fixings are installed to plans and manufacturer specifications.
		3.3	Piping and materials are installed according to design drawings, job specifications and standards.
		3.4	Pipework is connected to the water source according to standards and authorities' requirements.
		3.5	Piping system is tested according to standards and job specifications.
		3.6	Test data is recorded in format required by job specifications and quality assurance procedures.
		3.7	***Sustainability principles and concepts*** are applied to installation process.
4	Clean up.	4.1	Work area is cleared and materials are disposed of, reused or recycled according to legislation, codes of practice and job specifications.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	***Information*** is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow and give instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - record test results in writing
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to fabricate, install and test fire hydrant pipework from a main, or branch into main, to a hose reel system
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- characteristics and application of different pipe fittings and fixture supports, including fixing and joining techniques
- excavation processes and procedures
- job safety analysis (JSA) and safe work method statements (SWMS)

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- levelling and alignment processes
- materials and assemblies relevant to installation of fire hydrant and hose reel systems
- pressure test systems and procedures
- process of fabricating and installing fire hydrant and hose reel systems
- relevant statutory and authority requirements related to fabricating and installing fire hydrant and hose reel systems
- SI system of measurements
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to fabricate and install fire hydrant and hose reel systems
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications of a fire hydrant and hose reel system, installing a leak-free hydrant and hose reel system from an existing branch in a water supply, using approved materials to design criteria and standards, ensuring:
  - application of sustainability principles and concepts
  - correct identification of location, design and details of proposed installations
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or

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Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete

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confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of tools and equipment
  - work site visitors and the public
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

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Environmental requirements cover water quality management and may include:	• clean-up protection • stormwater protection • waste management.
Quality assurance requirements may include:	• Australian standards • Environment Protection Authority (EPA) • internal company quality assurance policy and risk management strategy • International Standards Organisation • site safety plan • workplace operations and procedures.
Tools and equipment may include:	• chain blocks • elevated work platform • forklifts • hand and power tools • hand trolleys • hoists and jacks • ladders • levelling equipment • lifting and load shifting equipment • manual excavation equipment • measuring equipment • mechanical excavation equipment • rollers • scaffolds • trench shoring equipment • welding equipment.

Sustainability principles and concepts:	• cover the current and future social, economic and environmental use of resources
	• may include:
	  • efficient use of material
	  • correct handling of hazardous materials
	  • appropriate recycling of material
	  • efficient water use
	  • efficient energy retention
	  • disposing of waste material to ensure minimal environmental impact
	  • selecting appropriate components to ensure

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minimal environmental impact.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- National Fire Protection Association (NFPA) and Factory Mutual performance-based codes of practice
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to fabricating and installing fire hydrant and hose reel systems
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPFS3034A Install control valve assemblies, actuating devices and local alarms

Modification History

Prerequisite unit updated
Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPFS3014A

Unit Descriptor

This unit of competency specifies the outcomes required to install control valve assemblies, actuating devices and local alarms for fire protection systems in commercial, industrial, residential and domestic situations.

Application of the Unit

Site location for work application may be either domestic or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications are obtained from relevant authority.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with installing control valve assemblies, actuating devices and local alarms are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	***Tools and equipment*** for installing control valve assemblies, actuating devices and local alarms, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient installation of control valve assemblies, actuating devices and local alarms.
2	Identify installation requirements.	2.1	System requirements are identified from job design criteria, specifications and standards.
		2.2	Quantities of materials required are calculated from plans and specifications.
		2.3	***Materials*** and equipment are identified, ordered and collected according to workplace procedures.
		2.4	Materials and equipment are checked for compliance with standards, docket and order form, and for

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			acceptable condition.
3	Install and test system components.	3.1	Components are set out according to plans, specifications and job instructions.
		3.2	Pipe supports and fixings are installed to plans and manufacturer specifications.
		3.3	Assemblies, devices, alarms, piping and materials are installed according to standards, plans and specifications.
		3.4	Jointing systems are installed in compliance with standards.
		3.5	Installed system is subjected to pressure testing according to standards, plans and specifications.
		3.6	Test data is recorded in format required by job specifications and quality assurance procedures.
		3.7	***Sustainability principles and concepts*** are applied to installation process.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	***Information*** is accessed and documentation completed according to regulatory authorities and workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow and give instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - record test results in writing
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to install and test control valve assemblies, actuating devices and alarms for an automated fire sprinkler system
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- characteristics and application of different pipe fittings and fixture supports, including fixing and joining techniques
- function and operation of a range of taps and valves
- job safety analysis (JSA) and safe work method statements (SWMS)

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- materials relevant to installation of control valve assemblies, actuating devices and local alarms
- pressure test systems and procedures
- process of installing control valve assemblies, actuating devices and local alarms
- processes for accessing information and for calculating material requirements
- relevant statutory and authorities' requirements related to installing control valve assemblies, actuating devices and local alarms
- SI system of measurement
- structural systems, building materials and building services
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to install and test control valve assemblies, actuating devices and local alarms
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications of an automated fire sprinkler system, installing and testing a control valve assembly, two actuating devices and an alarm to design criteria and standards, ensuring:
  - application of sustainability principles and concepts
  - correct identification of location, design and details of proposed installation
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will

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usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and

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practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of tools and equipment
  - work site visitors and the public
  - working at heights
  - working in proximity to others
- use of firefighting equipment

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- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- waste management.

Quality assurance requirements may include:

- Australian standards
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:

- cutting and threading equipment
- elevated work platforms
- hand and power tools
- ladders
- testing equipment
- welding equipment.

Materials may include:

- actuating devices
- control valve assemblies
- local alarms
- pipes or other approved materials.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient use of material
  - correct handling of hazardous materials
  - appropriate recycling of material
  - efficient water use
  - efficient energy use
  - disposing of waste material to ensure minimal environmental impact
  - selecting appropriate components to ensure minimal environmental impact.

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Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to installing control valve assemblies, actuating devices and local alarms
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPFS3036A Install special hazard systems

Modification History

Prerequisite unit updated
Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPFS3016A

Unit Descriptor

This unit of competency specifies the outcomes required to install special hazard extinguishing systems, including decommissioning gaseous agent containers and actuation devices.

Application of the Unit

Site location for work application may be either domestic or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

All technicians performing work described in this unit that involves the handling of prescribed ozone depleting substances (ODS) and synthetic greenhouse gases (SGG) extinguishing agents must hold an appropriate extinguishing agent handling licence (EAHL).

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with installing special hazard extinguishing systems are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Knowledge and understanding of ODS and SGG legislative and industry requirements are applied to install activities for special hazard fire suppression systems.
		1.5	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.6	***Tools and equipment*** for installing ***special hazard extinguishing systems***, including personal protective equipment, are selected and checked for serviceability.
		1.7	Work area is prepared to support efficient installation of special hazard extinguishing systems.

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2	Identify installation requirements.	2.1	System requirements are identified from job design criteria, specifications and standards.
		2.2	Components for special hazard system are selected according to plans, specifications, standards, manufacturer recommendations and job requirements.
		2.3	Components and other ***materials*** are identified, ordered and collected according to workplace procedures.
		2.4	Components are checked for compliance with standards, docket and order form, and for acceptable condition.
3	Decommission gaseous agent containers and actuation devices.	3.1	Gaseous agent containers and actuation devices are decommissioned according to decommissioning guidelines; organisational, customer, legislative and industry requirements; and manufacturer specifications.
		3.2	All interface actuation control devices are confirmed and isolated; and appropriate signage, documentation and lock-off are put in place.
		3.3	Manual, electrical and mechanical ***actuation control devices*** are disconnected.
		3.4	Pneumatic actuation control devices, and pilot and slave tubes and fittings are identified and disconnected.
		3.5	Transport caps on actuation outlets, plugs and locking devices are connected.
		3.6	Container bank manifold connection components are disconnected.
		3.7	Transport caps on valve outlets are connected.
		3.8	Removal and transportation of gaseous agent containers to storage or reclaim facility are organised according to legislative requirements and WHS policies and procedures.
		3.9	***Documentation*** and decommissioning sign-off requirements are completed and confirmed with relevant persons.

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4	Install and test special hazard systems.	4.1	System is set out according to drawings, specifications and job instructions.
		4.2	Fixings are installed to plans and manufacturer specifications.
		4.3	Pipe supports are compliant with standards, plans and specifications.
		4.4	Pipes, fittings and components are installed according to plans, specifications and standards.
		4.5	Piping system is subjected to pressure testing according to standards, plans and specifications.
		4.6	Test data is recorded in format required by plans, specifications and authorities' requirements.
		4.7	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
5	Clean up.	5.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		5.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		5.3	***Information*** is accessed and documentation completed according to regulatory authorities and workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow and give instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - record test results in writing
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to install and test special hazard protection system consisting of an extinguishing agent, piping, actuating devices and sprinkler delivery
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- function and operation of system components
- hazard categories, classes of fire hazard, extinguishing agents and application methods
- job safety analysis (JSA) and safe work method statements (SWMS)
- National Fire Protection Association (NFPA) and Factory Mutual performance-based

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codes of practice
- pressure test systems and procedures
- procedures for cylinder anchorage
- process of installing and testing special hazard systems
- relevant statutory and authorities' requirements related to installing special hazard systems
- requirements for room ventilation and integrity
- SI system of measurement
- structural systems, building materials and building services
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to install and test special hazard systems
- applying safety requirements throughout work sequence, including electrical safety and the use of personal protective clothing and equipment
- given the plans and system specifications of a special hazard fire suppression system, identifying the requirements and installing one special hazards fire suppression system (not prescribed ODS or SGG extinguishing agent), incorporating a high pressure carbon dioxide gas storage cylinder, connected by piping to a simple distribution system with one actuating device, to design criteria and standards, ensuring:
  - application of sustainability principles and concepts
  - correct identification of requirement, design and details of proposed installation
  - correct selection and use of appropriate processes, tools and equipment, including those for use with installed gaseous agent containers and actuation devices
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes, including ODS and SGG regulations, standards, order requirements and organisational quality procedures and processes
  - decommissioning installed gaseous agent

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containers and actuation devices using decommissioning guidelines
- communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills

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with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices

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- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of tools and equipment
  - work site visitors and the public
  - working at heights
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- complying with ODS and SGG legislation, codes and regulations, e.g. Ozone Protection and Synthetic Greenhouse Gas Management Act 1989
- preventing emissions of prescribed ODS and SGG extinguishing agents
- waste management.

Quality assurance requirements may include:

- Australian standards
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:

- angle grinders
- cutting and threading equipment
- elevated work platforms
- hand and power tools
- ladders
- scaffolds
- testing equipment
- welding equipment.

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Special hazard extinguishing systems may include:

- carbon dioxide and other gases (such as inergen and argonite)
- chemical reaction and explosion suppression systems
- dry chemical
- foam
- prescribed ODS and SGG extinguishing agents (such as halon and NAF S-III)
- water
- water mist.

Materials may include:

- actuating devices
- extinguishing agents, including prescribed ODS and SGG materials or other approved materials
- pipes
- sprinkler and delivery systems.

Actuation control devices (also known as actuators) may include:

- electrical operation by signal generated from control and indicating equipment (CIE) panel as part of a fire alarm detection system
- manual operation by direct push lever or pull cable system
- mechanical operation via signal from local control station or fire detector
- pneumatic operation from fire detector (typically heat).

Documentation may include:

- corrective action reports
- customer recommendation forms
- equipment recommendation forms
- expense claims
- job cards
- maintenance record system
- manufacturer system documentation
- product documentation
- service agreements
- test results and test reports.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:

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- disposing of waste material to ensure minimal environmental impact
- efficient energy use
- efficient use and recycling of material
- selecting appropriate components to ensure minimal environmental impact.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- NFPA and Factory Mutual performance-based codes of practice
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to installing special hazard systems
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

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Custom Content Section

Not applicable.

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CPCPFS3037A Install domestic and residential life safety sprinkler systems

Modification History

Prerequisite unit updated
Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPFS3017A

Unit Descriptor

This unit of competency specifies the outcomes required to install domestic and residential life safety fire sprinkler systems in buildings up to four storeys in height.

Application of the Unit

Site location for work application is domestic and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with installing domestic and residential life safety sprinkler systems are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	***Tools and equipment*** for installing domestic and residential life safety sprinkler systems, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient installation of domestic and residential life safety sprinkler systems.
2	Identify installation requirements.	2.1	System requirements are identified from plans, specifications and standards.
		2.2	***Materials*** selected are to comply with standards.
		2.3	Quantities of materials required are calculated from plans and specifications.
		2.4	Materials and equipment are identified, ordered and collected according to workplace procedures.
		2.5	Materials and equipment are checked for compliance with standards, docket and order form, and for

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			acceptable condition.
3	Install and test system components.	3.1	System is set out according to plans, specifications and job instructions.
		3.2	Pipe supports are to comply with standards, plans and specifications.
		3.3	Fixings are installed to plans, specifications and manufacturer specifications.
		3.4	Assemblies, devices, alarms, piping and materials are installed according to standards, plans and specifications.
		3.5	Jointing systems are installed in compliance with standards.
		3.6	Installed system is subjected to pressure testing according to standards, plans and specifications.
		3.7	Test data is recorded in format required by plans, specifications and quality assurance procedures.
		3.8	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	***Information*** is accessed and documentation completed according to regulatory authorities and workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow and give instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - record test results in writing
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to install and test a fire sprinkler system, including piping, control valve assemblies, actuating devices, alarms and sprinkler heads
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- components and materials relevant to installing domestic and residential life safety sprinkler systems
- function and operation of a range of alarms, actuating devices, sprinkler heads and valves
- job safety analysis (JSA) and safe work method statements (SWMS)

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- National Fire Protection Association (NFPA) and Factory Mutual performance-based codes of practice
- pressure test systems and procedures
- process of installing domestic and residential life safety sprinkler systems
- processes for accessing information and for calculating material requirements
- relevant statutory requirements related to installing domestic and residential life safety sprinkler systems
- SI system of measurement
- structural systems, building materials and building services
- understanding of fire rating
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to install and test domestic and residential life safety sprinkler systems
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications of domestic fire sprinkler system for a single storey dwelling, installing and testing a domestic and residential life safety sprinkler system consisting of a water supply, piping, control valves, actuating devices, alarms and sprinkler heads to design criteria and standards, ensuring:
  - application of sustainability principles and concepts
  - correct identification of location, design and details of proposed installation
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will

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usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and

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practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of tools and equipment
  - work site visitors and the public
  - working at heights
  - working in proximity to others
- use of firefighting equipment

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- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- waste management.

Quality assurance requirements may include:

- Australian standards
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:

- cutting and threading equipment
- elevated work platforms
- hand and power tools
- ladders
- silver brazing equipment
- testing equipment
- welding equipment.

Materials may include:

- actuating devices
- control valve assemblies
- local alarms
- post-chlorinated PVC (PVC-C), steel or copper pipes or other approved materials
- sprinkler heads.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient water use
  - efficient energy use
  - efficient use and recycling of material
  - disposing of waste material to ensure minimal environmental impact
  - selecting appropriate components to ensure minimal environmental impact.

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Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- NFPA and Factory Mutual performance-based codes of practice
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to installing domestic and residential life safety sprinkler systems
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPFS3038A Test and maintain fire hydrant and hose reel installations

Modification History

Prerequisite unit updated
Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPF3018A

Unit Descriptor

This unit of competency specifies the outcomes required to test and maintain fire hydrant and hose reel installations in commercial and domestic situations.
The unit requires the conduct of routine testing and maintenance of fire hydrant and hose reel installations in the full range of domestic and commercial situations.

Application of the Unit

Site location for work application may be either domestic or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans, specifications, maintenance manuals, previous maintenance reports and equipment data are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with testing and maintaining fire hydrant and hose reel installations are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	***Tools, equipment*** and ***materials*** for testing and maintaining fire hydrant and hose reel installations, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient testing and maintenance of fire hydrant and hose reel installations.
2	Perform routine maintenance.	2.1	Maintenance tasks detailed in maintenance schedule are performed to specification.
		2.2	Mechanical equipment and system components are checked with appropriate instruments according to standards and job specifications.

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		2.3	Faulty items or components are identified and appropriate service procedure is selected.
3	Repair and replace faulty components and test job.	3.1	Equipment is safely isolated according to regulations and health and safety requirements.
		3.2	Faulty items or components are removed using appropriate tools, equipment and procedures.
		3.3	Replaceable items are selected from manufacturers' catalogue.
		3.4	Replacement or service items are fitted according to manufacturer recommendations and site specifications.
		3.5	Adjustments are made to equipment or components to ensure specifications are met.
		3.6	Operational check of system is carried out to ensure compliance with job specifications.
		3.7	Maintenance report is documented in format required by maintenance specification.
		3.8	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	***Information*** is accessed and documentation completed according to regulatory authorities and workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow and give instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - record test results in writing
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
  - conduct operational checks to confirm system is operating to specification
  - diagnose faults and undertake necessary repairs or replacement of faulty components
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- function and operation of system components
- job safety analysis (JSA) and safe work method statements (SWMS)

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- National Fire Protection Association (NFPA) and Factory Mutual performance-based codes of practice
- process of testing and maintaining fire hydrant and hose reel installations
- relevant statutory and authority requirements related to testing and maintaining fire hydrants and hose reel installations
- SI system of measurement
- structural systems, building materials and building services
- test apparatus and procedures
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to test and maintain fire hydrants and hose reel installations
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given four faulty fire hydrants and hose reel installations, conducting routine testing and maintenance to diagnose and repair faults and perform component service, ensuring:
  - application of sustainability principles and concepts
  - correct identification of the requirement and conduct of testing and maintaining the installations
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or

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Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete

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confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of tools and equipment
  - work site visitors and the public
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

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Environmental requirements may include:

- clean-up protection
- waste management.

Quality assurance requirements may include:

- Australian standards
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:

- elevated work platforms
- hand and power tools
- ladders
- scaffolds
- testing equipment.

Materials may include:

- fire hydrants
- fittings and connections
- hoses
- hose reels.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient energy usage
  - efficient use and recycling of material
  - efficient water usage, harvesting and/or disposal.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- NFPA and Factory Mutual performance-based codes of practice

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- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to testing and maintaining fire hydrant and hose reel connections
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPFS3040A Conduct basic functional testing of water-based fire-suppression systems

Modification History

Prerequisite unit updated
Minor change to sustainability PC
Not equivalent to CPCPFS3020A

Unit Descriptor

This unit of competency specifies the outcomes required to complete weekly, monthly, and six-monthly inspection and testing procedures to verify that water-based fire-suppression systems function as intended. The unit involves working safely, isolating plant and interfaces, conducting compliance tests, visually inspecting, identifying non-compliance defects, fulfilling mandatory reporting requirements, and resetting water-based fire-suppression systems.

Application of the Unit

This unit of competency supports fire protection technicians responsible for functional testing of water-based fire suppression systems.
It does not apply to load or flow testing of water-based fire-suppression systems or pressure reducing or limiting valves.
Individuals operate within the scope of their defined roles and responsibilities and perform the functional tests as part of their work duties and according to work procedures and relevant Australian standards, to verify that equipment functions as intended.
The unit must be applied strictly according to relevant state or territory legislative and industry requirements.

Licensing/Regulatory Information

The fire protection technician is not permitted to undertake any installation, replacement, maintenance and repair functions that are restricted to licensed trades or occupations (subject to relevant state or territory regulations).
Different states and territories may have regulatory mechanisms that apply to this unit. Candidates are advised to check for regulatory limitations.

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Pre-Requisites

CPCPCM2043A	Carry out WHS requirements
	OR BOTH:
CPPCMN2002A	Participate in workplace safety arrangements
	AND
CPPFES2006A	Prepare for installation and servicing operations

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Apply compliance requirements to service operations.	1.1	***Legislative and industry requirements*** are interpreted, confirmed and applied to ***organisational requirements***.
		1.2	Preparations are made for the conduct of functional testing according to organisational requirements.
2	Conduct inspections and record results.	2.1	Workplace procedures are followed and risk control measures applied when inspecting ***water-based fire-suppression systems***.
		2.2	***Key control valves*** are identified and their functions determined with reference to manufacturer instructions to allow routine inspection activities according to

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			legislative and industry requirements.
		2.3	Plant and other ***system interfaces*** that must be isolated to allow the inspection activities are identified.
		2.4	Visual inspections are conducted as described in legislative and industry requirements.
		2.5	Inspection results are recorded according to legislative and industry requirements.
		2.6	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
3	Conduct testing and record results.	3.1	Test methods are implemented according to legislative and industry requirements.
		3.2	Routine ***testing procedures*** are conducted according to the required ***frequency schedule*** to verify the system functions as intended.
		3.3	Test results are compared with legislative and industry requirements.
		3.4	Results are documented according to legislative and industry requirements**.**
		3.5	Report is prepared and forwarded to relevant persons for action according to legislative and industry requirements.
		3.6	System is reinstated according to organisational requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- customer service skills
- interpersonal skills to relate to people from a range of social and cultural backgrounds
- language, literacy and numeracy skills to:
  - communicate with others clearly and concisely, verbally and in writing
  - record and report information neatly and legibly
  - read and apply work instructions and specifications
  - read and record measurements
- planning and organising skills to:
  - estimate time to complete activities
  - prioritise tasks
- technical skills to:
  - identify system components
  - operate valves, switches and levers to test system operation
  - work safely when applying workplace housekeeping procedures

Required knowledge

- basic principles of operation and purpose of components of water-based fire suppression systems:
  - accelerators and exhausters
  - alarm ‘dry’ (i.e. deluge) control valve assembly components
  - alarm ‘wet’ control valve assembly components
  - batteries
  - circulation and system pressure relief valves
  - isolation and control valves
  - pressure and flow switches
  - pressure gauges
  - pump controllers and ancillary equipment for control and indication
  - pumpsets
  - retard chambers
  - solenoid valves
  - sprinkler heads
  - system block plans

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    - system pressure gauge schedules
    - water motor alarm gong
    - water supply tanks: atmospheric, pressure and suction with priming tanks
- general operation of water-based systems
- general operation of a gauge
- key features of legislation, regulations and codes applicable to inspecting and testing water-based fire-suppression systems
- metric and imperial pressure gauge readings
- systems and components:
    - air compressors fitted to systems
    - circulation and system pressure relief valves
    - controls on the pumpset controller panel:
        - fuel gauges
        - indicators
        - main isolating switch
    - flow switches and associated testing equipment
    - isolating valves associated with water-based fire-suppression system
    - main water supply underground key-operated valve location
    - pressure gauges
    - pumpsets associated with water-based fire-suppression system
    - pump starting switches
    - suction inlet strainers or screen on a static water supply for the water-based fire-suppression system
    - system block plan requirements for design details of systems installed since 1972
    - system main alarm bell and/or alarm strobe indicating building entry point for emergency personnel
    - system pressure gauge schedules, where required
    - system pressure maintenance or jacking pumps
    - water-based fire-suppression system control and alarm valves and ancillary equipment for control and alarm operation indication/interface
    - water supply tanks, water level indicators and automatic inflow valves
- terminology used in relation to water-based fire-suppression system
- water supply tanks:
    - atmospheric
    - pressure
    - suction with priming tanks
- water-based systems applications, as defined in AS 2118 Automatic fire sprinkler systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by observation of practical demonstration of basic functional testing of a range of water-based fire-suppression systems.

If all relevant aspects of evidence cannot be demonstrated in a work environment, the remainder should be assessed through realistic simulations, projects, or oral questioning on case study scenarios.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- apply sustainability principles and concepts when conducting basic functional testing of water-based fire-suppression systems
- apply safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- complete tasks according to the relevant Australian standard
- conduct inspection and testing tasks specified in the weekly, monthly and six-monthly frequency schedule
- perform functional testing of the following water-based fire-suppression systems:
  - alternate wet or general systems with no pumpset system
  - alternate wet or general systems with pumpset system and tank
  - residential or domestic systems
  - combined sprinkler and hydrant systems
  - deluge systems
  - pre-action or recycle systems.

Context of and specific resources for assessment

Assessment of essential underpinning knowledge may be conducted in an off-site context. It is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- adequate water supply and draining or recycling arrangements to operate water-based fire-suppression systems
- operational water-based fire-suppression systems
- pictures and cut-away sections of control assemblies and

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valves to show operation.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Property Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Guidance information for assessment

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

This unit could be assessed on its own or in combination with other units relevant to the job function, for example:

- CPCPFS3041A Inspect and test fire pumpsets
- CPCPFS3042A Conduct annual functional testing of complex water-based fire-suppression systems
- CPCPFS3043A Conduct functional water flow testing.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Legislative and industry requirements may include:

- dangerous goods regulations
- licensing arrangements
- environmental regulations
- WHS legislation, regulations and codes
- relevant commonwealth and state or territory building Acts, regulations and codes, such as National Construction Code (NCC)
- relevant Australian standards, such as:
  - AS 1851 Maintenance of fire protection systems and equipment
  - note: Australian standards are frequently revised and users must always check for currency and amendments
- other relevant legislation relating to fire suppression equipment, including:
  - international shipping codes
  - marine codes for different Australian states
  - requirements of Australian petroleum industry.

Organisational requirements may be located in quality assurance and procedures manuals and may include:

- client-specific contractual requirements
- documentation and information systems and processes
- legal and organisational policies and guidelines, including personnel practices and guidelines outlining work roles, responsibilities and delegations
- legislation relevant to service operation
- use of electronic job scheduling and communication devices.

Water-based fire-suppression systems are defined in AS 2118 Automatic fire sprinkler systems, and include:

- alternate wet or dry systems
- combined sprinkler or hydrant systems
- deluge systems
- dry systems
- pre-action or recycle systems
- residential and domestic systems
- tail-end systems
- wet and general systems.

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Key control valves may include those:

- specified in AS 2118 Automatic fire sprinkler systems
- installed in:
  - associated control valve trim
  - activation small bore pipework to the alarm and control valve assembly.

System interfaces may include:

- components, such as:
  - flow switches
  - pressure switches
  - tamper switches
  - valve positioning switches
- devices that operate signals between the water-based fire-suppression system and other services, such as:
  - building heating, ventilation and cooling (HVAC) services
  - fire brigade monitoring providers
  - other life safety systems, such as:
    - warning systems
    - fire indicator panel (FIP).

Sustainability principles and concepts:

- cover the social, economic and environmental use of resources to meet current and future needs
- may include:
  - efficient use of material
  - efficient energy and water use
  - rain harvesting and disposal.

Testing procedures may include:

- organisational procedures for conducting testing activities according to AS 1851 Maintenance of fire protection systems and equipment, including procedures for:
  - checking desiccant condition (air dryer or crystals, water separator bowl) and cleaning or replacing as required
  - checking oil level and visually assessing condition of oil on air compressor.

Frequency schedules may include:

- schedules of work conducted at regular frequencies as defined in AS 1851 (general section) that relate to the work scope for weekly, monthly, and six-monthly inspection and testing schedules.

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Unit Sector(s)

Competency field

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPFS3041A Inspect and test fire pumpsets

Modification History

Prerequisite unit updated
Minor change to sustainability PC
Not equivalent to CPCPFS3021A

Unit Descriptor

This unit of competency specifies the outcomes required to complete weekly, monthly, and six-monthly inspection and testing procedures to verify that fire pumpsets function as intended. The unit covers working safely, conducting compliance tests, visually inspecting, and identifying non-compliance defects. It involves mandatory reporting requirements, as well as general isolations and resetting fire pumpsets.

Application of the Unit

This unit of competency supports fire protection technicians responsible for inspecting and testing fire pumpsets.
Individuals operate within the scope of their defined roles and responsibilities and perform the inspections and testing as part of their work duties to verify that equipment functions as intended, according to work procedures and relevant Australian standards.
The unit must be applied strictly according to relevant state or territory legislative and industry requirements.

Licensing/Regulatory Information

The fire protection technician is not permitted to undertake any installation, replacement, maintenance and repair functions that are restricted to licensed trades or occupations (subject to relevant state or territory regulations).
Different states and territories may have regulatory mechanisms that apply to this unit. Candidates are advised to check for regulatory limitations.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements
	OR BOTH:

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CPPCMN2002A	Participate in workplace safety arrangements
	AND
CPPFES2006A	Prepare for installation and servicing operations

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Apply compliance requirements to service operations.	1.1	***Legislative and industry requirements*** are interpreted, confirmed and applied to ***organisational requirements***.
		1.2	Location and equipment are ***checked for compliance*** with legislative and industry requirements, and ***action*** is taken according to organisational requirements.
		1.3	Preparations are made for functional inspection and testing according to organisational requirements.
2	Conduct inspections and record results.	2.1	Workplace procedures are followed and risk control measures are applied when inspecting fire ***pumpsets***.
		2.2	Fire pumpset controls are identified and their function determined, with reference to manufacturer instructions in order to conduct inspections and tests according to legislative and industry requirements.
		2.3	Plant and other ***system interfaces*** that must be isolated to

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			allow the inspection activities are identified.
		2.4	Visual inspections are conducted as described in legislative and industry requirements.
		2.5	Fire pumpset inspection results are recorded against requirements according to legislative and industry requirements.
		2.6	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
3	Conduct tests and record results.	3.1	Methods for tests are implemented according to legislative and industry requirements.
		3.2	Routine ***testing procedures*** are conducted according to the required ***frequency schedule*** to verify that the system functions as intended.
		3.3	Test results are compared with legislative and industry requirements.
		3.4	Results are documented according to legislative and industry requirements.
		3.5	Report is completed and forwarded to relevant persons for action according to legislative and industry requirements.
		3.6	System is reinstated according to organisational requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- customer service skills
- interpersonal skills to relate to people from a range of social and cultural backgrounds
- language, literacy and numeracy skills to:
  - communicate with others clearly and concisely, verbally and in writing
  - read and comply with work instructions and specifications
  - read and record measurements
  - record and report information neatly and legibly
- planning and organising skills to:
  - estimate time to complete activities
  - prioritise tasks
- technical skills to:
  - operate valves, switches and levers to test system operation
  - use hand and power tools
  - work safely when performing work tasks, including workplace housekeeping procedures

Required knowledge

- application of fire pumpsets as defined in AS 2941 Fixed fire protection installations – Pumpset systems and AS 2118 Automatic fire sprinkler systems, and used in systems
- basic principles of hydraulics:
  - basic head or pressure calculation for height per metre
  - metric and imperial pressure scales
  - properties of water:
    - three states of matter
    - incompressible
- basic principles of operation and purpose of components:
  - accumulators
  - batteries
  - circulation and system pressure relief valves
  - compression ignition pumpset drivers
  - electrical pumpset drivers
  - engine starting and control or monitor batteries

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    - header tanks
    - impellers
    - isolating valves associated with pumpsets
    - jacking or jockey pumps
    - multi-stage pumps
    - pressure gauges
    - pump controllers and ancillary equipment for control and indications
    - pump drivers
    - pump glands and seals
    - pump performance curves
    - pump starting devices
    - pumpset couplings
    - safety guards
    - system pressure gauge schedules
    - water supply tanks:
        - atmospheric
        - pressure
        - suction with priming tanks
- general operation of pumpsets:
    - cooling systems
    - design speed requirements
    - exhaust systems
    - fuel systems
    - full load operation
    - normal running operation
    - pre-start and post-start checks
    - pumpset controllers
    - starting and stopping methods
    - suction and discharge connections and pressure readings
- terminology used in relation to pumpsets

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by observation of practical demonstration of inspecting and testing a range of types of fire pumpsets at customers' premises.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- apply sustainability principles and concepts when inspecting and testing fire pumpsets
- apply safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- conduct inspection and testing for the scheduled weekly, monthly and six-monthly activities according to the relevant Australian standard and on the following pumpsets:
  - compression ignition pumpset used as a booster pumpset on a sprinkler/hydrant system fed from:
    - town mains supply
    - static water supply
  - dual drive electric and compression ignition pumpset
  - electrical pumpset used as a:
    - booster pumpset on a sprinkler/hydrant system fed from a town mains supply or a static water supply
    - jacking pump or hose reel pump.

Context of and specific resources for assessment

Assessment of essential underpinning knowledge may be conducted in an off-site context. It is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- adequate water supply and draining or recycling arrangements to operate pumpsets under full load
- operational pumpsets
- pictures and cut-away sections of pumpsets to show operation.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Property

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Services Training Package

- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Guidance information for assessment

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

This unit could be assessed on its own or in combination with other units relevant to the job function, for example:

- CPCPFS3040A Conduct basic functional testing of water-based fire-suppression systems
- CPCPFS3042A Conduct annual functional testing of complex water-based fire-suppression systems
- CPCPFS3043A Conduct functional water flow testing

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Legislative and industry requirements may include:

- dangerous goods regulations
- environmental regulations
- licensing arrangements
- WHS legislation, regulations and codes
- relevant commonwealth and state or territory building Acts, regulations and codes, such as National Construction Code (NCC)
- relevant Australian standards, such as:
  - AS 1851 Maintenance of fire protection systems and equipment
  - note: Australian standards are frequently revised and users must always check for currency and amendments
- other relevant legislation relating to fire protection equipment, including:
  - international shipping codes
  - marine codes for different Australian states
  - requirements of Australian petroleum industry.

Organisational requirements may be located in quality assurance and procedures manuals and may include:

- client-specific contractual requirements
- documentation and information systems and processes
- legal and organisational policies and guidelines, including personnel practices and guidelines outlining work roles, responsibilities and delegations
- legislation relevant to service operation
- use of electronic job scheduling and communication devices.

Checking for compliance may include:

- undertaking commissioning tests detailed in relevant Australian standards and manufacturers' documents to verify performance of an installed, repaired or altered piece of equipment or system
- applying inspections, tests and survey requirements to equipment and systems, according to relevant Australian standards, to determine that they are:
  - capable of operating as intended when originally installed
  - still suitable for the fire hazard or risk being protected, as

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no change in occupancy or use of the area protected has occurred since the equipment or system was installed or last modified
    - providing the coverage and protection needed to meet original design and performance requirements
- reviewing documentation to verify that installed systems comply with legislative and industry requirements, such as:
    - building's essential services or fire safety measures listing
    - relevant commonwealth and state or territory building Acts, regulations and codes
    - relevant Australian standards listed on essential service listing
    - environmental regulations.

Action may include:

- advising client
- documenting non-compliance
- making equipment safe
- reporting, as required.

***Pumpset* types** may include**:**

- those used in fire protection systems that comply with Australian standards, such as:
    - AS 1851 Maintenance of fire protection systems and equipment
    - AS 2118 Automatic fire sprinkler systems
    - AS 2419 Fire hydrant installations
    - AS 2941 Fixed fire protection installations – Pumpset systems
    - AS CA-1962 Automatic sprinkler installations
    - NFPA 20 Standard for the installation of stationary fire pumps for fire protection (US).

System interfaces may include:

- components, such as:
    - flow switches
    - pressure switches
    - tamper switches
    - valve positioning switches
- devices that operate signals between the pumpset and other services, such as:
    - building monitoring services
    - other life safety systems, such as:

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- warning systems
- fire indicator panel (FIP)
- security monitoring services.

Sustainability principles and concepts:

- cover the social, economic and environmental use of resources to meet current and future needs
- may include:
  - efficient use of material
  - efficient energy and water use
  - rain harvesting and disposal.

Testing procedures include:

- activities that comply with requirements of AS 1851 Maintenance of fire protection systems and equipment to verify the following pump functions:
  - pump starts at correct pressure
  - pump supplies correct kPa at no flow condition requirements.

Frequency schedules include:

- schedules of work conducted at regular frequencies as defined in AS 1851 (general section) that relate to the work scope for weekly, monthly, and six-monthly inspection and testing schedules.

Unit Sector(s)

Competency field

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPFS3042A Conduct annual functional testing of complex water-based fire-suppression systems

Modification History

Prerequisite unit updated
Minor change to sustainability PC
Not equivalent to CPCPFS3022A

Unit Descriptor

This unit of competency specifies the outcomes required to complete annual inspection and testing procedures to verify that complex water-based fire-suppression system equipment functions as intended.
The unit involves working safely, isolating and resetting water-based fire-suppression systems, conducting compliance tests, visually inspecting, identifying non-compliance defects, and fulfilling mandatory reporting requirements.

Application of the Unit

This unit of competency supports fire protection technicians responsible for annual functional testing of water-based fire protection systems, including functional water flow tests.
Individuals operate within the scope of their defined roles and responsibilities and perform the functional water flow tests as part of their work duties to verify that equipment functions as intended, according to work procedures and relevant Australian standards.
The unit must be applied strictly according to relevant state and territory legislative and industry requirements.

Licensing/Regulatory Information

The service technician is not permitted to undertake any installation, replacement, maintenance and repair functions that are restricted to licensed trades or occupations (subject to relevant state or territory regulations).
Different states and territories may have regulatory mechanisms that apply to this unit. Candidates are advised to check for regulatory limitations.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements
	OR BOTH:

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CPPCMN2002A	Participate in workplace safety arrangements
	AND
CPPFES2006A	Prepare for installation and servicing operations

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Apply compliance requirements to service operations.	1.1	***Legislative and industry requirements*** are interpreted, confirmed and applied to ***organisational requirements***.
		1.2	Location and equipment are ***checked for compliance*** with legislative and industry requirements, and ***action*** is taken according to organisational requirements.
		1.3	Preparations are made for conducting ***annual functional testing*** according to organisational requirements on ***complex components*** of ***water-based fire-suppression systems***.
2	Conduct inspections and record results.	2.1	Workplace procedures are followed and risk control measures applied when inspecting water-based fire-suppression systems.
		2.2	***Key control valves*** are identified and their functions determined with reference to installation drawings in order to conduct routine inspection and tests according

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			to legislative and industry requirements.
		2.3	Visual inspections are conducted on complex components as described in legislative and industry requirements.
		2.4	Inspection results are recorded according to legislative and industry requirements.
		2.5	Visual ***installation and design survey*** inspections are conducted according to legislative and industry requirements.
		2.6	Installation and design survey report is prepared according to legislative and industry requirements.
		2.7	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
3	Conduct testing and record results.	3.1	Plant and other ***system interfaces*** to be isolated are identified to allow testing according to legislative and industry requirements.
		3.2	Test methods for complex components are used according to legislative and industry requirements.
		3.3	Testing procedures are conducted on complex components at required ***frequency schedule*** to verify that system functions as intended.
		3.4	Test results are compared with legislative and industry requirements.
		3.5	Results are documented according to legislative and industry requirements.
		3.6	Report is prepared and forwarded to persons for action according to legislative and industry requirements.
		3.7	System is reinstated according to organisational requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- interpersonal skills to relate to people from a range of social and cultural backgrounds
- customer service skills
- language, literacy and numeracy skills to:
  - communicate with others clearly and concisely, verbally and in writing
  - read and comply with work instructions and specifications
  - read and record measurements
  - record and report information neatly and legibly
- planning and organising skills to:
  - estimate time to complete activities
  - prioritise tasks
- technical skills to:
  - operate valves, switches and levers to test system operation
  - work safely when applying workplace housekeeping procedures

Required knowledge

- definitions of basic principles of operation and purpose of components of complex water-based fire protection systems
- general operation of a gauge
- general operation of complex water-based fire-suppression systems
- metric and imperial pressure gauge readings
- systems:
  - air compressors fitted to systems
  - circulation and system pressure relief valves
  - controls on the pumpset controller panel:
    - fuel gauges
    - indicators
    - main isolating switch
  - flow switches and associated testing equipment
  - isolating valves associated with water-based fire-suppression system
  - pressure gauges
  - pressure reducing equipment
  - pumpsets associated with water-based fire-suppression system

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  - pump starting switches
  - purpose and key requirements of system block plan for installations installed since 1972
  - suction inlet strainers and screens on a static water supply for water-based fire-suppression system
  - system main alarm bell and/or alarm strobe indicating building entry point for emergency personnel
  - system pressure gauge schedules, where required
  - water-based fire-suppression system control and alarm valves and ancillary equipment for control and alarm operation indication/interface
  - water supply tanks, water level indicators and automatic inflow valves
  - water supply underground key-operated valve location
- terminology used in relation to water-based fire-suppression systems
- water-based fire-suppression system applications as defined in AS 2118 Automatic fire sprinkler systems or AS 2419 Fire hydrant installations

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by observation of practical demonstration of the inspection and testing procedures to verify that complex water-based fire-suppression system equipment functions as intended.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- apply sustainability principles and concepts when conducting annual functional testing of complex water-based fire-suppression systems
- apply safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- conduct relevant annual inspection and test requirements (other than water flow testing) according to the current Australian standard on water-based fire suppression systems, including complex components for the following systems:
  - general sprinkler systems with no pumpset system
  - general sprinkler systems with pumpset system and tank
  - combined sprinkler and hydrant systems
  - deluge systems
  - pre-action or recycle systems
  - pressure reducing valves
  - pressure relief valves
- perform an installation and design survey on a Class 5 to 9 building of at least 5 stories or greater than 10,000 square metre building to produce an inspection report on:
  - pipework external condition
  - sprinkler head condition
  - sprinkler head obstructions
  - sprinkler head location and spacing
  - sprinkler head compatibility and ambient conditions (RTI and sprinkler head and spray pattern)
  - external sprinkler requirements
  - design standard suitable for current building occupation requirements, such as classification and storage heights.

Context of and specific resources for

Assessment of essential underpinning knowledge may be conducted in an off-site context. It is to comply with relevant

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assessment

regulatory or Australian standards' requirements.

Resource implications for assessment include:

- adequate water supply and draining or recycling arrangements to operate water-based fire-suppression system
- necessary tools, specialist equipment, manuals and relevant documentation
- operational water-based fire-suppression system
- pictures and cut-away sections of control assemblies and valves to show operation
- training and assessment record book.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Property Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Guidance information for assessment

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

This unit could be assessed on its own or in combination with other units relevant to the job function, for example:

- CPCPFS3040A Conduct basic functional testing of water-based fire-suppression systems
- CPCPFS3041A Inspect and test fire pumpsets
- CPCPFS3043A Conduct functional water flow testing.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Legislative and industry requirements may include:

- dangerous goods regulations
- environmental regulations
- licensing arrangements
- WHS legislation, regulations and codes
- relevant commonwealth and state or territory building Acts, regulations and codes, such as National Construction Code (NCC)
- relevant Australian standards, such as:
  - AS 1851 Maintenance of fire protection systems and equipment
  - note: Australian standards are frequently revised and users must always check for currency and amendments
- other relevant legislation relating to fire protection equipment, including:
  - international shipping codes
  - marine codes for different Australian states
  - requirements of Australian petroleum industry.

Organisational requirements may be located in quality assurance and procedures manuals and may include:

- client-specific contractual requirements
- documentation and information systems and processes
- legal and organisational policy and guidelines
- legislation relevant to service operation
- personnel practices and guidelines outlining work roles, responsibilities and delegations
- use of electronic job scheduling and communication devices.

Checking for compliance may include:

- applying inspections, tests and survey requirements to equipment and systems, according to relevant Australian standards, to determine that they are:
  - capable of operating as intended when originally installed
  - still suitable for the fire hazard or risk being protected, as no change in occupancy or use of the area protected has occurred since the equipment or system was installed or last modified
  - providing the coverage and protection needed to meet

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original design and performance requirements
- reviewing documentation to verify that installed systems comply with legislative and industry requirements, such as:
  - building's essential services or fire safety measures listing
  - relevant commonwealth and state or territory building Acts, regulations and codes
  - relevant Australian standards listed on essential service listing
  - environmental regulations.

Action may include:
- advising client
- documenting non-compliance
- making equipment safe
- reporting, as required.

Annual functional testing:
- is inspection, testing and surveying according to AS 1851 Maintenance of fire protection systems and equipment for water-based fire-suppression systems
- includes:
  - annual frequency inspection, testing and surveying activities, except water flow proving testing
  - operating:
    - pressure reducing valves to verify operation is at required pressures
    - pressure relief valves to verify operation is at required pressures
    - accelerator/exhauster and double interlock valves to verify operation is at required pressures and delivery time on dry pipe or pre-action systems.

Complex components may include:
- components of a water-based fire-suppression system associated with:
  - double interlock systems
  - pressure reducing systems
  - accelerator/exhauster systems.

Water-based fire-suppression systems include systems defined in:
- AS 2118 Automatic fire sprinkler systems (known as the SAA code for automatic fire sprinkler systems)
- AS 2419 Fire hydrant installations, including systems such as:
  - alternate wet and dry systems

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- combined sprinkler and hydrant systems
- deluge systems
- dry systems
- hydrant systems
- pre-action or recycle systems
- residential and domestic systems
- tail-end systems.

Key control valves may include those:

- specified in AS 2118 Automatic fire sprinkler systems
- installed in the:
  - associated control valve trim
  - activation small bore pipework to the alarm and control valve assembly.

Installation and design survey may include:

- annual survey required by AS 1851 Maintenance of fire protection systems and equipment to determine that water-based fire-suppression system's design and installation are not impaired by changes to:
  - building structure
  - occupant use
  - environment
- conducted from floor level to identify:
  - design standard suitable for current building occupation requirements:
    - building classification
    - storage heights
  - external sprinkler requirements
  - pipework corrosion or damage
  - sprinkler head:
    - compatibility and ambient conditions
    - head condition
    - head location and spacing
    - head obstructions
    - spray pattern
    - temperature rating and response time index (RTI).

Sustainability principles and concepts:

- cover the social, economic and environmental use of resources to meet current and future needs
- may include:

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- efficient use of material
- efficient energy and water use
- rain harvesting and disposal.

System interfaces may include:

- components, such as:
  - flow switches
  - pressure switches
  - tamper switches
  - valve positioning switches
- devices that operate signals between the water-based fire-suppression system and other services, such as:
  - building heating, ventilation and cooling (HVAC) services
  - fire brigade monitoring providers
  - other life safety systems, such as:
    - warning systems
    - fire indicator panel.

Frequency schedules are:

- schedules of work conducted at regular frequencies as defined in AS 1851 Maintenance of fire protection systems and equipment (general section) that relate to the work scope for annual inspection, and testing and survey maintenance schedules.

Unit Sector(s)

Competency field

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPFS3043A Conduct functional water flow testing

Modification History

Prerequisite unit updated
Minor change to sustainability PC
Not equivalent to CPCPFS3023A

Unit Descriptor

This unit of competency specifies the outcomes required to complete functional water flow proving and load tests on water-based fire-suppression systems. The unit covers working safely while conducting water flow testing. It involves satisfying mandatory reporting requirements as well as general isolations and resetting the water-based fire-suppression system.

Application of the Unit

This unit of competency supports fire protection technicians responsible for functional testing of water-based fire protection systems.
Individuals operate within the scope of their defined roles and responsibilities and perform the functional water flow tests as part of their work duties to verify that equipment functions as intended, according to work procedures and relevant Australian standards.
The unit must be applied strictly according to relevant state or territory legislative and industry requirements.

Licensing/Regulatory Information

The fire protection technician is not permitted to undertake any installation, replacement, maintenance and repair functions that are restricted to licensed trades or occupations (subject to relevant state or territory regulations).
Different states and territories may have regulatory mechanisms that apply to this unit. Candidates are advised to check for regulatory limitations.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements
	OR BOTH:
CPPCMN2002A	Participate in workplace safety arrangements
	AND

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CPPFES2006A Prepare for installation and servicing operations

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Apply compliance requirements to service operations.	1.1	***Legislative and industry requirements*** are confirmed and applied to ***organisational requirements***.
		1.2	Location and equipment are ***checked for compliance*** with legislative and industry requirements and ***action*** is taken according to organisational requirements.
2	Prepare system and equipment to conduct functional water flow proving test.	2.1	Workplace procedures are followed and risk control measures applied when setting up on ***water-based fire-suppression systems***.
		2.2	Appropriate ***test points*** are identified.
		2.3	***Water flow test equipment*** required is identified according to manufacturer instructions and legislative and industry requirements.
		2.4	Required water flow test equipment is attached according to manufacturer instructions and organisational requirements.
		2.5	Relevant plant and other ***system interfaces*** are identified and isolated according to organisational requirements.
		2.6	Water supply isolating valves are located, types of

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			valves identified, and valves operated as required to isolate water supplies according to organisational requirements.
		2.7	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
3	Conduct functional water flow proving and load test, and record results.	3.1	Test methods are implemented according to ***frequency schedule*** and legislative and industry requirements.
		3.2	Tests are conducted on each water supply, as required, to verify that systems function as intended.
		3.3	Test results are compared with legislative and industry requirements.
		3.4	Results are documented according to legislative and industry requirements.
		3.5	Report is prepared and forwarded to relevant persons for action according to legislative and industry requirements.
		3.6	System is reinstated according to organisational requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- language, literacy and numeracy skills to:
  - communicate with others clearly and concisely, verbally and in writing
  - interpret data from a range of flow testing equipment
  - read, understand and comply with work instructions and specifications
  - read, understand and record measurements
  - record and report information neatly and legibly
- planning and organising skills to:
  - estimate time to complete activities
  - prioritise tasks
- technical skills to:
  - attach flow and pressure test equipment according to manufacturer specifications
  - check test equipment for calibration and operation according to manufacturer specifications
  - interconnect test equipment into recording devices
  - operate valves, switches and levers to test system operation
  - use:
    - portable tachometer on pump shaft to read speed
    - clamp or tong current meter to read motor operating current
    - throttling control valve to control water flow
  - work safely when applying workplace housekeeping procedures

Required knowledge

- basic principles of hydraulics
- basic principles of operation and purpose of components of a water-based fire protection system:
  - alarm ‘dry’ (i.e. deluge) control valve assembly components
  - alarm ‘wet’ control valve assembly components
  - booster valve assembly
  - circulation and system pressure relief valves
  - compression ignition engine governing controls
  - differential pressure gauges
  - hand tachometers

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    - hydrant landing valve assembly
    - isolation and control valves
    - manometers
    - orifice plates
    - Pitot tube water flow test instrument
    - pressure and flow switches
    - pressure gauges
    - pump controllers and ancillary equipment for control and indication
    - pumpsets
    - solenoid valves
    - system block plans
    - system pressure gauge schedules
    - throttling valves
    - ultrasonic flow measuring equipment
    - ultrasonic thickness gauges
    - Venturi devices
    - water supply tanks: atmospheric, pressure and suction with priming tanks
- general operation of a pumpset, covering:
    - compression ignition engine governing control devices
    - cooling systems
    - design speed requirements
    - exhaust systems
    - fuel systems
    - full load operation
    - normal running operation
    - pre-start and post-start checks
    - pumpset performance curve
    - pumpset controllers
    - starting and stopping methods
    - suction and discharge connections and pressures readings
- general operation of water-based fire-suppression systems
- terminology used in relation to water-based fire-suppression systems
- water-based fire-suppression system components:
    - air compressors fitted to control valves
    - circulation and system pressure relief valves
    - controls on the pumpset controller panel:
        - fuel gauges
        - indicators
        - main isolating switch
    - electric motor specification plate

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  - flow switches and associated testing equipment
  - isolating valves associated with water-based fire-suppression system
  - mains water supply underground key-operated valve location
  - most hydraulically disadvantaged testing point on a system hose reel and hydrant system
  - pressure gauges
  - pumpsets associated with water-based fire-suppression systems
  - pump starting switches
  - suction inlet strainers or screen on a static water supply for water-based fire-suppression system
  - system block plans
  - system main alarm bell or alarm strobe indicating building entry point for emergency personnel
  - system pressure gauge schedules
  - water supply tanks, water level indicators and automatic inflow valves
  - water-based fire-suppression system control and alarm valves and ancillary equipment for control and alarm operation indication or interface
- water-based fire-suppression system applications, as defined in AS 2118

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by observation of practical demonstration of basic functional water flow testing of a range of water-based fire-suppression systems.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- apply sustainability principles and concepts when conducting functional water flow testing
- apply safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- conduct functional water-flow testing of the following water-based fire-suppression systems:
  - deluge systems
  - hydrant systems
  - pre-action or recycle systems
  - residential and domestic systems
  - wet and general systems with no pumpset system
  - wet and general systems with pumpset system and tank.

Context of and specific resources for assessment

Assessment of essential underpinning knowledge may be conducted in an off-site context. It is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- adequate water supply and draining or recycling arrangements to operate the water-based fire-suppression system
- calibrated water flow measuring and pressure gauge equipment
- operational water-based fire-suppression systems.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Property Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential

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underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Guidance information for assessment

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

This unit could be assessed on its own or in combination with other units relevant to the job function, for example:

- CPCPFS3041A Inspect and test fire pumpsets.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Legislative and industry requirements may include:

- relevant commonwealth and state or territory building Acts, regulations and codes, such as National Construction Code (NCC)
- relevant Australian standards, such as:
  - AS 1851 Maintenance of fire protection systems and equipment
  - note: Australian standards are frequently revised and users must always check for currency and amendments
- relevant legislation relating to testing of fire protection equipment, including:
  - dangerous goods regulations
  - environmental regulations
  - international shipping codes
  - licensing arrangements
  - marine codes for different Australian states
  - work health and safety (WHS) legislation, regulations and codes
  - requirements of Australian petroleum industry.

Organisational requirements may be located in quality assurance and procedures manuals and may include:

- client-specific contractual requirements
- documentation and information systems and processes
- legal and organisational policies and guidelines, including personnel practices and guidelines outlining work roles, responsibilities and delegations
- legislation relevant to service operation
- using electronic job scheduling and communication devices.

Checking for compliance may include:

- undertaking commissioning tests detailed in relevant Australian standards and manufacturers' documentation to verify performance of an installed, repaired or altered piece of equipment or system
- applying inspections, tests and survey requirements to equipment and systems, according to relevant Australian standards, to determine that they are:
  - capable of operating as intended when originally installed
  - still suitable for the fire hazard or risk being protected, as no change in occupancy or use of the area protected has

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occurred since the equipment or system was installed or last modified
  - providing the coverage and protection needed to meet original design and performance requirements
- reviewing documentation to verify that installed systems comply with legislative and industry requirements, such as:
  - building's essential services or fire safety measures listing
  - environmental regulations
  - relevant commonwealth and state or territory building Acts, regulations and codes
  - relevant Australian standards listed on essential service listing.

Action may include:

- advising client
- documenting non-compliance
- making equipment safe
- reporting, as required.

Water-based fire-suppression systems are defined in AS 2118 Automatic fire sprinkler systems and AS 2419 Fire hydrant installations, and may include:

- alternate wet and dry systems
- combined sprinkler and hydrant systems
- deluge systems
- dry systems
- hydrant systems
- pre-action or recycle systems
- residential and domestic systems
- tail-end systems
- alternate wet and general systems.

Test points are:

- specific locations where test equipment can be attached to measure and record water flow and pressure to meet legislative and industry requirements.

Water flow test equipment may include:

- differential pressure gauges
- hand tachometers
- manometers
- orifice plates
- Pitot tube water flow test instrument
- ultrasonic flow measuring equipment
- ultrasonic thickness gauges
- Venturi devices.

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System interfaces may include:

- components such as flow, pressure, tamper and valve positioning switches that operate signals between the water-based fire-suppression system and other services, such as:
  - building heating, ventilation and cooling (HVAC) services
  - fire brigade monitoring providers
  - other life safety systems, such as:
    - warning systems
    - fire indicator panel.

Sustainability principles and concepts:

- cover the social, economic and environmental use of resources to meet current and future needs
- may include:
  - efficient use of material
  - efficient energy and water use
  - rain harvesting and disposal.

Frequency schedules include:

- schedules conducted at regular frequencies, as defined in AS 1851, and relating to weekly, monthly, and six-monthly inspection and testing activities.

Unit Sector(s)

Competency field

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPFS3044A Install distribution and range pipes

Modification History

This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

- Outcomes changed to include reference to draining down. References to sustainability and work health and safety strengthened
- Range of other minor editorial changes

Not equivalent to CPCPFS3032A Install distribution and range pipes

Unit Descriptor

This unit of competency specifies the outcomes required to install distribution and range pipes to carry all commonly used fire extinguishing agents, above and below ground. The installation may involve a new system or an alteration (extension or modification) to an existing system.

Application of the Unit

This unit of competency supports the work of fire protection industry personnel responsible for installing distribution and range pipes.
Site location for work may be commercial, industrial or residential, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this unit. Candidates are advised to check for regulatory requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Approved plans and specifications are obtained from relevant authority.
		1.2	***Work health and safety (WHS) requirements*** associated with installing ***distribution and range pipes***, and workplace ***environmental requirements*** are identified and applied to task planning.
		1.3	***Quality assurance requirements*** are identified according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	***Tools and equipment*** for installing distribution and range pipes, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient installation of distribution and range pipes.
2	Identify installation requirements.	2.1	System requirements are identified from job design criteria, specifications and standards.
		2.2	Quantities of required ***materials*** are calculated from plans and specifications.
		2.3	Allowances for fabrication and assembly are correctly determined and transferred.
		2.4	Materials and equipment are identified, ordered and collected according to workplace procedures.

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		2.5	Materials and equipment are checked for compliance with standards, docket and order form, and acceptable condition.
3	Install piping system.	3.1	WHS requirements, workplace environmental requirements and quality requirements are applied to work tasks.
		3.2	When altering existing systems, system is ***isolated and drained down*** to allow connection without causing water damage.
		3.3	Pipework is set out according to drawings, specifications and job instructions.
		3.4	Pipe supports and fixings are installed according to plans, manufacturer specifications, and relevant codes and standards.
		3.5	Piping and materials are installed according to design drawings, job specifications and standards.
		3.6	***Mechanical jointing systems*** are installed according to design drawings, job instructions and standards.
		3.7	***Sustainability principles and concepts*** are applied to installation.
4	Clean up.	4.1	Work area is cleared, with materials disposed of or recycled according to ***statutory and regulatory authority*** requirements.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	***Information*** is accessed and documentation completed according to regulatory authorities' and workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - determine pipe installation requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - follow and give instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and calculations
- planning and organisational skills to:
  - plan and sequence tasks with others
  - plan and set out work
- problem-solving skills to:
  - determine and use safe draining down methods
  - report faults in tools, equipment or materials to appropriate personnel
- reading skills to interpret drawings and specifications
- teamwork skills to work with others to action tasks
- technical skills to use tools and equipment required to install distribution and range pipes and related components
- technology skills to:
  - access site-specific instructions in a variety of media
  - use mobile communication technology
- writing skills to complete workplace checklists and forms

Required knowledge

- characteristics and application of different pipe fittings and fixture supports, including fixing and joining techniques
- excavation processes and procedures required for installation of below-ground pipework
- levelling and alignment processes to ensure correct installation of pipework
- materials required to install distribution and range pipes
- processes for calculating material requirements
- properties and characteristics of water, including pressure and flow rates
- relevant statutory and authority requirements relating to installing distribution and range pipes

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- requirements of job safety analyses (JSA) and safe work method statements (SWMS)
- SI system of measurement
- sources of relevant information relating to pipe installation requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- locate, interpret and apply relevant information, standards and specifications to install or modify distribution and range pipes
- apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- as a minimum, given the plans and specifications of an automated fire sprinkler system:
  - install distribution and range pipes to provide a free-flowing and leak-free water supply to at least three branches to design criteria and standards, ensuring correct identification of location, design and details of proposed installation
  - relocate two sprinklers in an existing system, including draining down the system
- complete work, ensuring:
  - application of sustainability principles and concepts
  - correct selection and use of appropriate processes, tools and equipment
  - completion of work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - effective communication with others
  - safe work practices.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

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Resource implications for assessment include:

- an induction procedure
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- safety data sheets, job safety analyses and safe work method statements
- research resources, including industry-related systems information.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using one or more of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to identify and interpret the essential underpinning knowledge required for practical application.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety

- handling of materials

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requirements must comply with commonwealth, state and territory legislation and regulations, and may include:	• hazard control
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including recognising and preventing hazards associated with:
	  • electricity
	  • hazardous materials and substances
	  • service lines
	  • surrounding structures and facilities
	  • trip hazards
	  • use of tools and equipment
	  • work site visitors and the public
	  • working at heights
	  • working in proximity to others
	• use of firefighting equipment
	• workplace environmental health and safety.

Distribution and range pipes may include:	• all pipework downstream from the alarm valve, both above and below ground
	• pipes composed of materials, including:
	  • chlorinated polyvinyl chloride (CPVC)
	  • copper
	  • ductile iron
	  • galvanised steel
	  • high density polyethylene (HDPE)
	  • mild steel
	  • stainless steel
	  • unplasticised polyvinyl chloride (UPVC).

Environmental requirements:	• cover water quality management
	• may include:
	  • clean-up protection
	  • stormwater protection
	  • waste management.

Quality assurance requirements may include:	• Australian standards • Environment Protection Authority (EPA) requirements • internal company quality assurance policy and risk management strategy • International Standards Organisation (ISO) standards • site safety plans • workplace operations and procedures.
Tools and equipment	• angle grinders • bending equipment

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may include:

- chain blocks
- cutting and threading equipment
- elevated work platforms (EWPs)
- forklifts
- hand and power tools, including hand excavation tools
- hand trolleys
- hoists and jacks
- ladders
- lifting and load shifting equipment
- measuring equipment
- mechanical excavation equipment
- rollers
- scaffolds
- welding equipment.

Materials may include:

- fittings
- fixings
- hangers
- jointing materials
- pipe work
- supports.

Isolating and draining down must include:

- identifying the correct system
- isolating:
  - alarm initiating devices
  - alarm signalling equipment
  - control and indicating equipment (CIE)
  - emergency warning system
  - water supply
- operating the main drain valve
- identifying and operating low drain point valves, if present
- checking system for residual water pressure
- applying drain-down water management techniques to prevent water damage.

Mechanical jointing systems may include:

- mechanical tees
- roll grooved:
  - couplings
  - elbows
  - tees.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include efficient:
  - energy use

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- use and recycling of material
- water use, harvesting and disposal.

Statutory and regulatory authorities may include:

- state or territory statutory authority
- statutory plumbing authority.

Information may include:

- charts and hand drawings
- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- memos
- organisation's work requirements
- regulatory and legislative requirements, particularly those relating to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to installing distribution and range pipes
- safety data sheets (SDS)
- signage
- verbal, written and graphical instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Plumbing and services

Custom Content Section

Not applicable.

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CPCPFS3045A Fit off sprinkler heads, controls and ancillary equipment

Modification History

This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

- Outcomes changed to include references to draining down and recharging. References to sustainability and work health and safety strengthened
- Range of other minor editorial changes

Not equivalent to CPCPFS3033A Fit off sprinkler heads, controls and ancillary equipment

Unit Descriptor

This unit of competency specifies the outcomes required to install sprinkler heads, system controls and ancillary equipment for sprinkler fire protection systems. The installation may involve a new system or an alteration (extension or modification) to an existing system.

Application of the Unit

This unit of competency supports the work of fire protection industry personnel responsible for fitting sprinkler heads, controls and ancillary equipment.
Site location for work may be commercial, industrial or residential, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this unit. Candidates are advised to check for regulatory requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Approved plans and specifications are obtained from relevant authority.
		1.2	***Work health and safety (WHS) requirements*** associated with fitting off sprinkler heads, ***system controls*** and ancillary equipment, and workplace ***environmental requirements*** are identified and applied to task planning.
		1.3	***Quality assurance requirements*** are identified according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	***Tools and equipment*** for installing sprinkler heads, system controls and ancillary equipment, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient installation of sprinkler heads, system controls and ancillary equipment.
2	Identify installation requirements.	2.1	Class of ***sprinkler system*** and associated design data are identified from system design specifications.
		2.2	Components are selected according to job requirements, plans and specifications, and other relevant codes and standards.
		2.3	***Materials*** and equipment are identified, ordered and collected according to workplace procedures.

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		2.4	Materials and equipment are checked for compliance with standards, docket and order form, and for acceptable condition.
3	Install sprinkler heads and ancillary equipment.	3.1	WHS requirements, workplace environmental requirements and quality requirements are applied to work tasks.
		3.2	When altering existing systems, system is ***isolated and drained down*** to allow connection without causing water damage, and then recharged.
		3.3	System is set out in compliance with plans, specifications and job instructions.
		3.4	Fixings and pipe supports are installed to plans, manufacturer specifications, standards and regulations.
		3.5	Sprinkler system components and ancillary equipment are installed according to plans, specifications and standards.
		3.6	***Sustainability principles and concepts*** are applied to installation process.
4	Clean up.	4.1	Work area is cleared and waste materials disposed of or recycled according to ***statutory and regulatory authority*** requirements.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	***Information*** is accessed and documentation completed according to regulatory authorities' and workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - follow and give instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and calculations
- planning and organisational skills to:
  - plan and sequence tasks with others
  - plan and set out work
- problem-solving skills to:
  - determine and use safe draining down methods
  - identify and report faults in tools, equipment or materials to appropriate personnel
- reading skills to interpret drawings and specifications
- teamwork skills to work with others to action tasks
- technical skills to use tools and equipment required to fit off sprinkler heads, controls and ancillary equipment
- technology skills to:
  - access site-specific instructions in a variety of media
  - use mobile communication technology
- writing skills to complete workplace checklists and forms

Required knowledge

- fire sprinkler systems for commercial, industrial or residential application
- functions and operation of a range of taps and valves
- processes for calculating material requirements
- properties and characteristics of water, including pressure and flow rates
- relevant statutory and authority requirements relating to installing sprinkler heads, system controls and ancillary equipment
- requirements of job safety analyses (JSA) and safe work method statements (SWMS)
- SI system of measurement
- sources of information relating to fitting off sprinkler heads, controls and ancillary equipment

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- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- locate, interpret and apply relevant information, standards and specifications to install sprinkler heads, system controls and ancillary equipment
- apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- as a minimum the ability to, given the plans and specifications of a simple automated fire sprinkler system, install at least two sprinkler heads, a flow switch and a pressure switch, ensuring:
  - correct identification of location, design and details of proposed installation
  - correct selection and use of appropriate processes, tools and equipment
  - completion of work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - effective communication with others
  - safe work practices
  - application of sustainability principles and concepts.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements

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- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- safety data sheets, job safety analyses and safe work method statements
- research resources, including industry-related systems information.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using one or more of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to identify and interpret the essential underpinning knowledge required for practical application.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety requirements must comply with commonwealth, state and territory legislation and regulations, and may

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:

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include:

- electricity
- hazardous materials and substances
- service lines
- surrounding structures and facilities
- trip hazards
- use of tools and equipment
- work site visitors and the public
- working at heights
- working in proximity to others
- use of firefighting equipment
- workplace environmental health and safety.

System controls may include:

- flow switches
- multiple jet controls (MJCs)
- pressure switches
- solenoids.

Environmental requirements:

- cover water quality management
- may include:
  - clean-up protection
  - stormwater protection
  - waste management.

Quality assurance requirements may include:

- Australian standards
- Environment Protection Authority (EPA) requirements
- internal company quality assurance policy and risk management strategy
- International Standards Organisation (ISO) standards
- site safety plans
- workplace operations and procedures.

Tools and equipment may include:

- chain blocks
- cutting and threading equipment
- elevated work platforms (EWPs)
- forklifts
- hand and power tools
- hand trolleys
- hoists and jacks
- hole saws
- ladders
- lifting and load shifting equipment
- manufacturer sprinkler keys
- scaffolds
- torque wrench
- welding equipment.

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Sprinkler systems may include:

- deluge
- dry pipe
- pre-action
- storage sprinklers
- wall wetting
- water mist
- wet pipe.

Materials may include:

- flow switches
- MJCs
- pressure switches
- sprinkler heads
- solenoids.

Isolation and draining down must include:

- identifying the correct system
- isolating:
  - alarm initiating devices
  - alarm signalling equipment
  - control and indicating equipment (CIE)
  - emergency warning system
  - water supply
- operating the main drain valve
- identifying and operating low drain point valves, if present
- checking system for residual water pressure
- applying drain-down water management techniques to prevent water damage.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include efficient:
  - energy use
  - use and recycling of material
  - water use, harvesting and disposal.

Statutory and regulatory authorities may include:

- state or territory statutory authority
- statutory plumbing authority.

Information may include:

- charts, drawings and sketches
- instructions issued by authorised organisational or external personnel
- memos
- organisation's work requirements
- regulatory and legislative requirements, particularly those relating to:
  - building codes
  - WHS and environmental requirements

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- plumbing regulations
- relevant Australian standards
- safe work procedures relating to installing sprinkler heads, system controls and ancillary equipment
- safety data sheets (SDS)
- signage
- verbal, written and graphical instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Plumbing and services

Custom Content Section

Not applicable.

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CPCPFS3046A Test the integrity of water-based fire protection systems using pressure

Modification History

This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

- Change to unit title
- Outcomes changed to include references to draining down and recharging. References to sustainability and work health and safety strengthened
- Range of other minor editorial changes

Not equivalent to CPCPFS3035A Test fire protection systems for pressure

Unit Descriptor

This unit of competency specifies the outcomes required to perform air or water pressure testing on fire safety sprinkler and hydrant systems to establish the integrity of the water-based system or to identify and rectify leaks.

Application of the Unit

This unit of competency supports the work of fire protection industry personnel responsible for pressure testing water-based fire protection systems.
Site location for work may be commercial, industrial or residential, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this unit. Candidates are advised to check for regulatory requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Approved plans and specifications are obtained from relevant authority.
		1.2	***Work health and safety (WHS) requirements*** associated with testing fire protection systems for pressure, and workplace ***environmental requirements***, are identified and applied to planning.
		1.3	***Quality assurance requirements*** are identified according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	***Tools, equipment*** and materials for testing fire protection systems for pressure, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient pressure testing of fire protection systems.
		1.7	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
2	Identify testing requirements.	2.1	***Types and locations of tests*** are determined from plans, specifications, and system pressure and flow specifications.
		2.2	Appropriate testing equipment is prepared for application according to standards and workplace requirements.

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3	Test fire protection systems.	3.1	***WHS requirements***, workplace ***environmental requirements*** and quality requirements are applied to work tasks.
		3.2	Test equipment is connected to system and pressure test is conducted according to standards and job specification.
		3.3	Test data is recorded in format required by the job specification and quality assurance procedures.
		3.4	If leak is identified, system is ***isolated and drained down***, leak is repaired and system is re-tested to confirm integrity.
		3.5	System is recharged and restored to operational condition.
4	Clean up.	4.1	Work area is cleared and waste materials disposed of or recycled according to ***statutory and regulatory authority*** requirements.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	***Information*** is accessed and documentation completed according to regulatory authorities' and workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - follow and give instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and calculations
- planning and organisational skills to:
  - plan and sequence tasks with others
  - plan and set out work
- problem-solving skills to:
  - determine safe draining down methods
  - identify and report faults in tools, equipment or materials to appropriate personnel
- reading skills to interpret drawings and specifications
- teamwork skills to work with others to action tasks
- technical skills to use tools and equipment required to test the integrity of water-based fire protection systems using pressure
- technology skills to:
  - access site-specific instructions in a variety of media
  - test fire protection systems for pressure, using air and water as testing media
  - use mobile communication technology
- writing skills to:
  - record test results
  - complete checklists and forms

Required knowledge

- components and operation of fire sprinkler systems and fire hydrant systems
- functions and operation of a range of taps and valves
- properties and characteristics of water pressure and flow rates
- relevant statutory and authority requirements relating to testing fire protection systems for pressure
- requirements of job safety analyses (JSA) and safe work method statements (SWMS)
- SI system of measurement

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- test procedures for sprinkler and hydrant systems
- workplace and equipment safety requirements that apply to the use of pressure testing equipment

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- locate, interpret and apply relevant information, standards and specifications to test the integrity of water-based fire protection systems using pressure
- apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- as a minimum, given both a fire sprinkler system and a fire hydrant system, the ability to conduct an air pressure test on one and a water pressure test on the other to achieve design and performance specifications of each system, ensuring:
  - application of sustainability principles and concepts
  - identification of requirements, design and details of the systems
  - selection and use of appropriate processes, tools and equipment
  - isolation and draining down of system and repair of leaks
  - completion of work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - effective communication with others
  - safe work practices.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure

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- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- safety data sheets, job safety analyses and safe work method statements
- research resources, including industry-related systems information.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using one or more of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to identify and interpret the essential underpinning knowledge required for practical application.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance**. Bold italicised** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety requirements must comply with commonwealth, state and

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices

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territory legislation and regulations, and may include:	• safe operating procedures, including recognising and preventing hazards associated with:
	  • electricity
	  • hazardous materials and substances
	  • service lines
	  • surrounding structures and facilities
	  • trip hazards
	  • use of tools and equipment
	  • work site visitors and the public
	  • working at heights
	  • working in proximity to others
	• use of first aid equipment
	• use of pressure-testing equipment
	• workplace environmental health and safety.

Environmental requirements:	• cover water quality management
	• may include:
	  • clean-up protection
	  • stormwater protection
	  • waste management.

Quality assurance requirements may include:	• Australian standards • Environment Protection Authority (EPA) requirements • internal company quality assurance policy and risk management strategy • International Standards Organisation (ISO) standards • site safety plans • workplace operations and procedures.
Tools and equipment may include:	• elevated work platforms (EWPs) • fall protection devices • hand and power tools • ladders • scaffolds • testing equipment.

Sustainability principles and concepts:	• cover the future social, economic and environmental use of resources
	• may include efficient:
	  • energy use
	  • use and recycling of materials
	  • water use, harvesting and disposal.

Types and locations of tests are to be determined according to the type of	• manufacturer • Australian standards • regulatory authority.

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system and the requirements of:

Isolation and draining down must include:

- identifying the correct system
- isolating:
  - alarm initiating devices
  - alarm signalling equipment
  - control and indicating equipment (CIE)
  - emergency warning system
  - water supply
- operating the main drain valve
- identifying and operating low drain point valves, if present
- checking system for residual water pressure
- applying drain-down water management techniques to prevent water damage.

Statutory and regulatory authorities may include:

- state or territory statutory authority
- statutory plumbing authority.

Information may include:

- charts, drawings and sketches
- instructions issued by authorised organisational or external personnel
- memos
- organisation's work requirements
- regulatory and legislative requirements, particularly those relating to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to the use of pressure testing equipment for ensuring the integrity of fire protection systems
- safety data sheets (SDS)
- signage
- verbal, written and graphical instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Plumbing and services

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Custom Content Section

Not applicable.

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CPCPFS3047A Test and maintain automatic fire sprinklers

Modification History

This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

- Outcomes changed to include references to draining down and recharging. References to sustainability and work health and safety strengthened
- Range of other minor editorial changes

Not equivalent to CPCPFS3039A Test and maintain automatic fire sprinklers

Unit Descriptor

This unit of competency specifies the outcomes required to test and maintain automatic fire sprinkler installations in the full range of commercial, industrial or residential situations.

Application of the Unit

This unit of competency supports the work of fire protection industry personnel responsible for testing and maintaining automatic fire sprinklers.
Site location for work may be commercial, industrial or residential, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this unit. Candidates are advised to check for regulatory requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans, specifications, maintenance manuals, previous maintenance reports, and equipment data are obtained and reviewed.
		1.2	***Work health and safety (WHS) requirements*** associated with testing and maintaining automatic fire sprinklers, and workplace ***environmental requirements***, are identified and applied to planning.
		1.3	***Quality assurance requirements*** are identified according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	***Tools, equipment*** and ***materials*** for testing and maintaining automatic fire sprinklers, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient testing and maintenance of automatic fire sprinklers.
2	Perform routine maintenance tasks.	2.1	Maintenance tasks detailed in maintenance schedule are performed to specification.
		2.2	Mechanical equipment and system components are checked using appropriate instruments according to standards and job specifications.
		2.3	Faulty items or components are identified and appropriate service procedure is selected.

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3	Repair or replace faulty components and test job.	3.1	***WHS requirements***, workplace ***environmental requirements*** and quality requirements are applied to work tasks.
		3.2	System is ***isolated and drained down***, as required, to complete tasks without causing water damage.
		3.3	Faulty items or components are removed using appropriate procedures, tools and equipment.
		3.4	Replacement items or components are selected and fitted according to manufacturer recommendations and site specifications.
		3.5	Adjustments are made to equipment or components to ensure specifications are met.
		3.6	System is recharged with water according to specifications.
		3.7	Operational check of system is carried out to ensure compliance with job specifications.
		3.8	Maintenance report is documented in format required by maintenance specification.
		3.9	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
4	Clean up.	4.1	Work area is cleared and waste materials disposed of or recycled according to ***statutory and regulatory authority*** requirements.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	***Information*** is accessed and documentation completed according to regulatory authorities' and workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - follow and give instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and calculations
- planning and organisational skills to:
  - plan and sequence tasks with others
  - plan and set out work
- problem-solving skills to determine safe draining down methods
- reading skills to interpret drawings and specifications
- teamwork skills to work with others to action tasks
- technical skills to use tools and equipment required to test and maintain automatic fire sprinklers
- technology skills to:
  - access site-specific instructions in a variety of media
  - use mobile communication technology
- writing skills to:
  - record test results
  - complete workplace checklists and forms

Required knowledge

- function and operation of automatic fire sprinkler systems and components
- National Fire Protection Association (NFPA) and Factory Mutual performance-based codes of practice
- relevant statutory and authority requirements relating to testing and maintaining automatic fire sprinkler systems
- requirements of job safety analyses (JSA) and safe work method statements (SWMS)
- SI system of measurement
- structural systems, building materials and building services that support or surround automatic fire sprinkler systems
- automatic fire sprinkler test apparatus and procedures

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- workplace and equipment safety requirements that apply to testing and maintaining automatic fire sprinklers

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- locate, interpret and apply relevant information, standards and specifications to test and maintain automatic fire sprinklers
- apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- as a minimum, given a faulty automatic fire sprinkler system, the ability to conduct routine testing and maintenance to diagnose and repair faults and perform component service or replacement, ensuring:
  - application of sustainability principles and concepts
  - conduct of operational checks to confirm system is operating to specification
  - isolation and draining down of the system, as required
  - diagnosis of faults and conduct of necessary repairs or replacement of faulty components
  - identification and accurate reporting of faults in tools, equipment or materials to appropriate personnel
  - identification of the requirement for, and then the conduct of, system testing and maintenance
  - selection and use of appropriate processes, tools and equipment
  - completion of work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - effective communication with others
  - safe work practices.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills,

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contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- safety data sheets, job safety analyses and safe work method statements
- research resources, including industry-related systems information.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using one or more of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to identify and interpret the essential underpinning knowledge required for practical application.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present

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with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety requirements must comply with commonwealth, state and territory legislation and regulations, and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of tools and equipment
  - work site visitors and the public
  - working at heights
  - working in proximity to others
- use of firefighting equipment
- workplace environmental health and safety.

Environmental requirements:

- cover water quality management
- may include:
  - clean-up protection
  - stormwater protection
  - waste management.

Quality assurance requirements may include:

- Australian standards
- Environment Protection Authority (EPA) requirements
- internal company quality assurance policy and risk management strategy
- International Standards Organisation (ISO) standards
- site safety plans
- workplace operations and procedures.

Tools and equipment may include:

- elevated work platforms (EWPs)
- hand and power tools
- ladders
- scaffolds
- testing equipment.

Materials may include:

- actuating devices
- alarms initiating devices
- control valve assemblies
- fittings and connections
- sprinkler heads.

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Isolation and draining down must include:

- identifying the correct system
- isolating:
  - alarm initiating devices
  - alarm signalling equipment
  - control and indicating equipment (CIE)
  - emergency warning system
  - water supply
- operating the main drain valve
- identifying and operating low drain point valves, if present
- checking system for residual water pressure
- applying drain-down water management techniques to prevent water damage.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include efficient:
  - energy use
  - use and recycling of material
  - water use, harvesting and disposal.

Statutory and regulatory authorities may include:

- state or territory statutory authority
- statutory gasfitting authority
- statutory plumbing authority.

Information may include:

- charts, drawings and sketches
- instructions issued by authorised organisational or external personnel
- memos
- organisation's work requirements
- regulatory and legislative requirements, particularly those relating to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating testing and maintaining automatic fire sprinklers
- safety data sheets (SDS)
- signage
- verbal, written and graphical instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

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Unit Sector(s)

Plumbing and services

Custom Content Section

Not applicable.

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CPCPFS3048A Install fixed fire pumpsets

Modification History

New unit.
This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

Unit Descriptor

This unit of competency specifies the outcomes required to install fixed fire pumpsets, including the pump base, power sources, pumps, pipework and associated components.

Application of the Unit

This unit of competency supports the work of fire protection industry personnel responsible for installing fixed fire pumpsets.
Site location for work may be commercial, industrial or residential and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this unit. Candidates are advised to check for regulatory requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements
or both:	
CPPCMN2002A	Participate in workplace safety arrangements
and	
CPPFES2006A	Prepare for installation and servicing operations

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Approved plans and specifications are obtained from ***statutory and regulatory authority***.
		1.2	***Work health and safety (WHS) requirements*** associated with installing ***fixed fire pumpsets***, and workplace ***environmental requirements***, are identified and applied to planning.
		1.3	***Quality assurance requirements*** are identified according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and according to work and statutory and regulatory authority requirements.
		1.5	***Tools and equipment*** for installing fixed fire pumpsets, including personal protective equipment, are selected and checked for serviceability.
		1.6	Sustainability principles and concepts are applied to work preparation and application.
2	Identify installation requirements.	2.1	Site is inspected and location for fixed fire pumpset is determined.
		2.2	Pump base requirements are identified from ***information***, drawings and specifications.
		2.3	***Materials*** and ***components*** required for installation of fixed fire pumpset are identified and ordered according to workplace procedures.

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		2.4	Materials and components are collected and checked for acceptable condition and compliance with relevant Australian standards, docket and order form.
		2.5	Work area is prepared to support efficient installation of fixed fire pumpsets.
3	Install fixed fire pumpsets.	3.1	***WHS requirements***, workplace ***environmental requirements*** and quality requirements are applied to work tasks.
		3.2	Pump base is set out to comply with drawings and specifications.
		3.3	Pump base is installed according to drawings and specifications.
		3.4	Fixed fire pumpsets are installed according to relevant Australian standards, drawings, specifications and manufacturer instructions.
		3.5	Pumpset pipework and associated pumpset valves are installed according to job specifications, Australian standards and manufacturer requirements.
		3.6	Pipework, connections and pumpset valves are checked for water tightness and correct operation.
		3.7	Piping system is pressure tested and results are recorded according to specifications.
		3.8	Pumpset is tested according to specifications and test data is recorded in required format.
4	Clean up.	4.1	Work area is cleared and waste materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	Documentation is completed according to regulatory authorities' and workplace requirements.

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Required Skills and Knowledge

Required skills

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - follow instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and calculations
- planning and organisational skills to:
  - plan and sequence tasks with others
  - plan and set out work
- problem-solving skills to report faults in tools, equipment or materials to appropriate personnel
- reading skills to interpret drawings and specifications
- teamwork skills to work with others to action tasks
- technical skills to use tools and equipment required to install fixed fire pumpsets
- technology skills to:
  - access site-specific instructions in a variety of media
  - use mobile communication technology
- writing skills to complete workplace documentation

Required knowledge

- atmospheric pressure measurements and principles in relation to fixed fire pumpset performance
- fixing techniques for mounting fixed fire pumpsets
- levelling and alignment requirements for correct installation of fixed fire pump and motor
- operation of fixed fire pumpsets and pumpset valves
- performance measures for fixed fire pumpsets
- power sources for fixed fire pumpsets, including operation and interaction of power sources
- properties of water, including pressure and flow rates
- relevant statutory and authority requirements relating to installing fixed fire pumpsets
- requirements of job safety analyses (JSA) and safe work method statements (SWMS)
- SI system of measurements
- Australian standards applicable to the installation of fixed fire pumpsets
- pressure testing equipment and procedures

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- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- locate, interpret and apply relevant information, Australian standards and specifications to install fixed fire pumpsets
- apply safety requirements throughout the work sequence, including electrical requirements and the use of personal protective clothing and equipment
- given the plans and specifications, plan the layout, and then install and test a fixed fire pumpset, ensuring:
  - correct identification of location, design and details of proposed installations
  - correct selection and use of appropriate processes, tools and equipment
  - completion of work to specification
  - compliance with regulations, relevant Australian standards and organisational quality procedures and processes
  - application of sustainability principles and concepts
  - effective communication with others
  - safe work practices.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work

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practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- safety data sheets, job safety analyses and safe work method statements
- research resources, including industry-related systems information.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using one or more of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to identify and interpret the essential underpinning knowledge required for practical application.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Statutory and regulatory authority may include:

- commonwealth, state or territory and local authorities administering applicable Acts, regulations and codes of practice.

Work health and safety requirements must comply with commonwealth, state and territory legislation and

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and

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regulations, and may include:	preventing hazards associated with: • electricity • hazardous materials and substances • other machines • surrounding structure and facilities • trip hazards • underground services • use of tools and equipment • work site visitors and the public • working at heights • working in confined spaces • working in proximity to others • use of firefighting equipment • workplace environmental health and safety.

Fixed fire pumpsets may include:	• centrifugal
	• diesel driven, including:
	  • close coupled
	  • long coupled with mechanical joints
	• electrically driven
	• hydrant, hose reel or sprinkler pumpsets
	• multi-outlet
	• multi-stage
	• positive displacement.

Environmental requirements:	• cover water quality management
	• may include:
	  • clean-up protection
	  • stormwater protection
	  • waste management.

Quality assurance requirements may include:	• Environment Protection Authority (EPA) requirements • environment policy • internal company quality assurance policy and risk management strategy • International Standards Organisation (ISO) standards • site safety plans • workplace operations and procedures.
Tools and equipment may include:	• chain blocks • concreting tools • forklifts • hand and power tools • hand trolleys

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- hoists and jacks
- lifting and load shifting equipment
- measuring and alignment tools
- pressure testing equipment
- rollers.

Information may include:

- charts and hand drawings
- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- job drawings
- memos
- organisation's work requirements
- regulatory and legislative requirements, particularly those relating to:
  - building codes
  - plumbing regulations
  - relevant Australian standards
  - WHS and environmental requirements
- safe work procedures relating to installing fixed fire pumpsets
- safety data sheets (SDS)
- signage
- verbal, written and graphical instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Materials may include:

- fixings
- pipe fabrication materials, such as:
  - black steel
  - copper
  - galvanised steel
  - polyvinyl chloride (PVC)
  - steel braided hose
- pipe supports.

Components may include:

- control panels
- diesel cooling system
- diesel exhaust system
- discharge expansion coupling
- eccentric reducer
- flow switches
- fuel tanks
- gauges

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- hydro pneumatic accumulator, also known as bladder tank
- jacking pump
- pipework, including:
  - annubar
  - circulation
  - discharge
  - drainage
  - suction
  - tank return lines
- power sources, which may be:
  - diesel
  - electric
- pressure switches
- pump base
- pumps
- starting devices
- valves, including:
  - circulation
  - isolation
  - pressure limiting
  - pressure reducing
  - pressure relief.

Unit Sector(s)

Plumbing and services

Custom Content Section

Not applicable.

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CPCPFS3049A Conduct preventive maintenance on fixed fire pumpsets

Modification History

New unit.
This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

Unit Descriptor

This unit of competency specifies the outcomes required to conduct preventive maintenance on circulatory systems, packed glands and special valves associated with fixed fire pumpsets.

Application of the Unit

This unit of competency supports the work of fire protection industry personnel responsible for preventive maintenance of fixed fire pumpsets, excluding mechanical overhaul of both pump and power source.
Site location for work may be commercial, industrial or residential, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this unit. Candidates are advised to check for regulatory requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements
or both:	
CPPCMN2002A	Participate in workplace safety arrangements
and	
CPPFES2006A	Prepare for installation and servicing operations

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans, ***information,*** specifications, maintenance manuals, previous maintenance reports and equipment data are obtained and reviewed.
		1.2	***Work health and safety (WHS) requirements*** associated with conducting preventive maintenance of fixed fire pumpsets, and workplace ***environmental requirements***, are identified and applied to planning.
		1.3	***Quality assurance requirements*** are identified according to workplace requirements.
		1.4	Tasks specified in relevant maintenance schedules or standards are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	***Tools, equipment and materials*** for maintaining fire protection special pump valves, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient preventive maintenance of fixed fire pumps.
		1.7	Pump is ***isolated*** according to workplace requirements before conducting maintenance tasks.
		1.8	***Sustainability principles and concepts*** are observed when preparing for work process.

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2	Perform preventive maintenance tasks on pump circulatory system.	2.1	***WHS requirements***, workplace ***environmental requirements and quality requirements*** are applied to work tasks.
		2.2	Cooling line strainer is disassembled, screen is removed and inspected, and materials found are identified and reported.
		2.3	Screen is cleaned and strainer is reassembled according to workplace procedures.
		2.4	Operation of circulatory valve is checked and valve is replaced if required.
		2.5	Pump is de-isolated, start test is conducted, and water flow is checked at tundish or sight gauge.
3	Perform preventive maintenance tasks on packing glands.	3.1	***WHS requirements***, workplace ***environmental requirements and quality requirements*** are applied to work tasks.
		3.2	Pump packing gland housing is disassembled and gland plate is removed.
		3.3	Packing is removed using appropriate packing extractors and disposed of according to workplace and environmental requirements.
		3.4	Gland is repacked according to manufacturer requirements.
		3.5	Gland plate is reinstalled and adjusted according to manufacturer and workplace requirements.
		3.6	Pump is de-isolated, operated and checked to ensure packing gland leak rate complies with manufacturer requirements.
4	Perform preventive maintenance tasks on special pump valves.	4.1	***WHS requirements***, workplace ***environmental requirements and quality requirements*** are applied to work tasks.
		4.2	Pump pipework is ***drained down*** according to workplace requirements and checked to ensure there is no residual water pressure.

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		4.3	***Special valves*** are disassembled and housing is inspected according to manufacturer and workplace requirements.
		4.4	***Internal components of special valves*** are inspected and replacements installed according to manufacturer and workplace requirements.
		4.5	Special valves are reassembled, pump is de-isolated and system is checked for correct operation according to manufacturer and workplace requirements.
5	Report anomalies and complete documentation.	5.1	Inspection and testing results are recorded and anomalies reported according to legislative and industry requirements.
		5.2	Preventive maintenance documentation is completed and forwarded to relevant persons for action according to legislative and industry requirements.
6	Clean up.	6.1	Work area is cleared and waste materials disposed of or recycled according to statutory and regulatory authority requirements.
		6.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - follow and give instructions
  - identify and report anomalies and faults to appropriate personnel
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and calculations
- planning and organisational skills to:
  - plan and sequence tasks with others
  - plan and set out work
- reading skills to interpret drawings and specifications
- teamwork skills to work with others to action tasks
- technical skills to use tools and equipment required for preventive maintenance of fixed fire pumpsets
- technology skills to:
  - access site-specific instructions in a variety of media
  - use mobile communication technology
- writing skills to complete workplace documentation

Required knowledge

- components and operation of fixed fire pumpsets, including valves
- isolation and draining-down procedures
- job safety analyses (JSA), safety data sheets (SDS) and safe work method statements (SWMS)
- properties and characteristics of water, including pressure and flow rates
- relevant statutory and authority requirements relating to preventive maintenance of fixed fire pumpsets
- SI system of measurement
- signs of deterioration and wear on valve housings
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- locate, interpret and apply relevant information, standards and specifications
- apply sustainability principles and concepts
- apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- as a minimum, given a diesel-driven, packed gland fixed fire pumpset, perform preventive maintenance on:
  - circulatory system
  - packing gland
  - pressure relief valve
  - pressure reducing valve
- correct selection and use of appropriate processes, tools and equipment
- completion of work to specification
- compliance with regulations, standards and organisational quality procedures and processes
- effective communication with others
- safe work practices.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task

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requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- safety data sheets, job safety analyses and safe work method statements
- research resources, including industry-related systems information.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using one or more of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to identify and interpret the essential underpinning knowledge required for practical application.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information may include:

- charts, drawings and sketches
- instructions issued by authorised organisational or external personnel
- memos

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- organisation's work requirements
- regulatory and legislative requirements, particularly those relating to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to preventive maintenance on fixed fire pumpsets
- safety data sheets (SDS)
- signage
- verbal, written and graphical instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Work health and safety requirements must comply with commonwealth, state and territory legislation and regulations, and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of tools and equipment
  - work site visitors and the public
  - working at heights
  - working in proximity to others
- use of firefighting equipment
- use of pressure testing equipment
- workplace environmental health and safety.

Environmental requirements:

- cover water quality management
- may include:
  - clean-up protection
  - stormwater protection
  - waste management.

Quality assurance requirements may include:

- Australian standards
- Environment Protection Authority (EPA) requirements
- internal company quality assurance policy and risk

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	management strategy • International Standards Organisation (ISO) standards • site safety plans • workplace operations and procedures.

Tools, equipment and materials may include:	• hand and power tools
	• ladders
	• replaceable components, such as:
	  • diaphragms
	  • gaskets
	  • gland packing materials
	  • O-rings
	  • springs
	• scaffolds
	• testing equipment.

Isolating procedures may be conducted on:	• alarm initiating devices • alarm signalling equipment • control and indicating equipment (CIE) • emergency warning system • power sources • water supply.

Sustainability principles and concepts:	• cover the current and future social, economic and environmental use of resources
	• may include efficient:
	  • energy use
	  • use and recycling of material
	  • water use, harvesting and disposal.

Draining-down procedures include:	• operating the main drain valve • identifying and operating low drain point valves, if present • checking system for residual water pressure • applying drain-down water management techniques to prevent water damage.
Special valves may include:	• pressure reducing • pressure limiting • pressure relief.
Internal components of special valves may include:	• diaphragms • gaskets • O-rings • restrictors • springs.

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Unit Sector(s)

Plumbing and services

Custom Content Section

Not applicable.

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CPCPFS4021A Commission domestic and residential fire suppression sprinkler systems

Modification History

Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPFS4011A

Unit Descriptor

This unit of competency specifies the outcomes required to test and commission domestic and residential fire suppression sprinkler systems in buildings up to four storeys in height.
It covers preparation for the work, identification and confirmation of system specifications and requirements, physical testing and commissioning of the systems, and work finalisation processes including records and documentation.

Application of the Unit

Site locations for work application will be domestic and residential, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with commissioning domestic and residential fire suppression sprinkler systems are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	***Tools, equipment*** and ***materials*** for commissioning domestic and residential fire suppression sprinkler systems, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient commissioning process.
2	Identify system requirements.	2.1	System design requirements are identified and confirmed from job specifications and according to standards.
		2.2	Commissioning requirements for ***domestic and residential fire suppression sprinkler systems*** are identified according to standards, authorities'

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			requirements and job specifications.
3	Test and commission system.	3.1	Sprinkler systems are checked to ensure type and installation conform to standards, job specifications, manufacturer recommendations and authorities' requirements.
		3.2	Operation of system is tested according to job specifications, manufacturer recommendations and authorities' requirements and is adjusted as required.
		3.3	System is commissioned and maintained to ensure correct operation according to standards, and manufacturer and job specifications.
		3.4	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
4	Clean up work area.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	***Information*** is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow and give instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to test and commission domestic and residential fire suppression sprinkler systems
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- components and materials of fire suppression sprinkler systems
- job safety analysis (JSA) and safe work method statements (SWMS)
- National Fire Protection Association (NFPA) and Factory Mutual performance-based codes of practice
- pressure test systems and procedures

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- process of installing, testing and commissioning domestic and residential fire suppression sprinkler systems
- processes for accessing information and for calculating material requirements
- properties of water, including pressure and flow rates
- relevant statutory requirements related to commissioning domestic and residential fire suppression sprinkler systems
- SI system of measurements
- standards applicable to the service
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to testing and commissioning domestic and residential fire suppression sprinkler systems
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- testing and commissioning a fire suppression sprinkler system for a residential complex containing a minimum of a communal catering and living area and multiple residential quarters (or equivalent) and a fire suppression sprinkler system for a domestic residence containing a minimum of two rooms, ensuring:
    - application of sustainability principles and concepts
    - correct identification of location, design specification and details of proposed service
    - correct selection and use of appropriate processes, tools and equipment
    - completion of all work to specification
    - compliance with regulations, standards and organisational quality procedures and processes
    - where at least one of the systems is for a complex of not less than three storeys
    - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and

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environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning

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experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances
  - other machines
  - surrounding structure and facilities
  - trip hazards
  - underground services
  - use of tools and equipment
  - work site visitors and the public

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- working at heights
- working in confined spaces
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Quality assurance requirements may include:

- Australian standards
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:

- hand and power tools
- test equipment.

Materials may include:

- actuating devices
- alarms
- control valve assemblies
- unplasticised polyvinyl chloride (PVC-U), steel or copper pipes and other approved materials
- sprinkler heads.

Domestic and residential fire suppression sprinkler systems may include:

- actuating devices
- alarms
- control valve assemblies
- piping
- sprinkler heads.

***Sustainability principles and concepts*:**

- cover the current and future social, economic and environmental use of resources
- may include efficient water usage, harvesting and/or disposal.

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Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards, including AS2118 Automatic fire sprinkler systems
- safe work procedures relating to testing and commissioning domestic and residential fire suppression sprinkler systems
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPFS4022A Commission and maintain special hazard fire suppression systems

Modification History

Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPFS4012A

Unit Descriptor

This unit of competency specifies the outcomes required to test, commission and maintain special hazard fire suppression systems.
It covers preparation for the work, identification and confirmation of system specifications and requirements, physical testing and commissioning of the systems, and conduct of systems maintenance and work finalisation processes, including records and documentation.

Application of the Unit

Site location for work application may be either domestic or residential, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

All technicians performing work described in this unit that involves the handling of prescribed ozone depleting substances (ODS) and synthetic greenhouse gases (SGG) extinguishing agents must hold an appropriate extinguishing agent handling licence (EAHL).

Pre-Requisites

Nil

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with commissioning special hazard fire suppression systems are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Apply knowledge and understanding of ODS and SGG legislative and industry requirements to commission, inspect, test and maintain activities for special hazard fire suppression systems.
		1.5	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.6	***Tools, equipment*** and ***materials*** for commissioning and maintaining ***special hazard fire suppression systems***, including personal protective equipment, are selected and checked for serviceability.
		1.7	Work area is prepared to support efficient commissioning process.

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2	Identify system requirements.	2.1	Service design requirements are identified and confirmed from job specifications and are according to standards.
		2.2	Testing and commissioning requirements of special hazard fire suppression systems are identified according to standards, authorities' requirements and job specifications.
3	Test and commission system.	3.1	Special hazard fire suppression systems are checked to ensure type and installation conform to standards, job specifications, manufacturer recommendations and authorities' requirements.
		3.2	Operation of system is tested according to job specifications, manufacturer recommendations and authorities' requirements, including ODS and SGG legislative requirements, and is adjusted as required.
		3.3	System is commissioned to ensure correct operation according to standards, and manufacturer and job specifications.
4	Maintain system.	4.1	Service and maintenance requirements are identified from manufacturer specifications or authorities' requirements.
		4.2	Replacement components are checked and fitted periodically and as required according to specifications.
		4.3	Maintenance and repair of system are conducted observing maintenance schedule described in current Australian standard, and manufacturer and/or authorities' requirements, including ODS and SGG legislative requirements.
		4.4	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.

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5	Clean up work area.	5.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		5.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		5.3	***Information*** is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow and give instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to test, commission and maintain a special hazard protection system consisting of an extinguishing agent, piping, actuating devices and sprinkler delivery
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- Environment Protection Authority (EPA) requirements, particularly in relation to ODS
- function and operation of components and qualities of materials of special hazards systems
- hazard categories, classes of fire hazard, extinguishing agents and application methods
- job safety analysis (JSA) and safe work method statements (SWMS)

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- National Fire Protection Association (NFPA) and Factory Mutual performance-based codes of practice
- pressure test systems and procedures
- procedures for cylinder anchorage and handling
- processes for accessing information and for calculating material requirements
- actuator handling process of installing, testing and commissioning special hazard systems
- relevant statutory requirements related to commissioning domestic and residential fire suppression sprinkler systems
- requirements for room ventilation and integrity
- SI system of measurements
- standards applicable to the service
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to testing and commissioning special hazard fire suppression systems
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- testing and commissioning one special hazard fire suppression system (not prescribed ODS or SGG extinguishing agent), being a gaseous, chemical or fluid-based system; and inspect, test and maintain one prescribed ODS or SGG system, ensuring:
  - application of sustainability principles and concepts
  - correct identification of location, design specification and details of proposed service
  - correct selection and use of appropriate processes, tools and equipment
  - completion of all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or

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Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete

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confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances
  - other machines
  - surrounding structures and facilities
  - trip hazards
  - underground services
  - use of tools and equipment
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
- use of firefighting equipment

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- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- complying with ODS and SGG legislation, codes and regulations, e.g. Ozone Protection and Synthetic Greenhouse Gas Management Act 1989
- preventing emissions of prescribed ODS and SGG extinguishing agents
- stormwater protection
- waste management.

Quality assurance requirements may include:

- Australian standards
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:

- hand and power tools
- test equipment.

Materials may include:

- actuating devices
- alarms
- control valve assemblies
- unplasticised polyvinyl chloride (PVC-U), steel or copper pipes or other approved materials
- special hazard fire suppression agents, including prescribed ODS and SGG materials
- sprinkler heads.

Special hazard fire suppression systems may include:

- carbon dioxide and other gases (such as inergen and argonite)
- chemical reaction and explosion suppression systems
- dry chemical
- foam
- prescribed ODS and SGG extinguishing agents (such as halon and NAF S-III)

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- water
- water mist.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient energy use
  - disposing of waste material to ensure minimal environmental impact
  - selecting appropriate components to ensure minimal environmental impact.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements, including ODS and SGG legislation, codes and regulations
  - plumbing regulations
- relevant Australian standards, including AS2118 Automatic fire sprinkler systems and AS1851 Maintenance of fire protection systems and equipment
- safe work procedures relating to testing and commissioning special hazard fire suppression systems
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

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Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPFS4023A Commission fire system pumpsets

Modification History

Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Minor change to unit title
Not equivalent to CPCPFS4013A

Unit Descriptor

This unit of competency specifies the outcomes required to test and commission fire system pumpsets.
It covers preparation for the work, identification and confirmation of system specifications and requirements, physical testing and commissioning of systems, and work finalisation processes, including records and documentation.

Application of the Unit

Site location for work application may be either domestic or residential, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with commissioning fire system pumpsets are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	***Tools, equipment*** and ***materials*** for commissioning fire system pumpsets, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient commissioning process.
2	Identify pumpset requirements.	2.1	System design requirements are identified and confirmed from job specifications and are according to standards.
		2.2	Testing and commissioning requirements of ***fire system pumpsets*** are identified according to standards, authorities' requirements and job specifications.

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3	Test and commission pumpsets.	3.1	Fire system pumpsets and ***pump controls*** are checked to ensure type and installation conform to standards, job specifications, manufacturer recommendations and authorities' requirements.
		3.2	Operation of pumpset is tested according to job specifications, manufacturer recommendations and authorities' requirements and adjusted as required.
		3.3	Pumpset is commissioned to ensure correct operation according to standards, and manufacturer and job specifications.
		3.4	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
4	Clean up work area.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	***Information*** is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow and give instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to test and commission a fire system pumpset
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- job safety analysis (JSA) and safe work method statements (SWMS)
- National Fire Protection Association (NFPA) and Factory Mutual performance-based codes of practice
- performance measures for fire system pumpsets
- process of installing, testing and commissioning fire system pumpsets
- processes for accessing information and for calculating material requirements

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- properties of water, including pressure, flow rates and atmospheric pressure
- relevant statutory requirements related to commissioning fire system pumpsets
- SI system of measurements
- standards applicable to installing and commissioning fire system pumpsets
- test systems, equipment and procedures
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to testing and commissioning fire system pumpsets
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- testing and commissioning one fire system pumpset, ensuring:
  - application of sustainability principles and concepts
  - correct identification of location, design specification and details of proposed set
  - correct selection and use of appropriate processes, tools and equipment
  - completion of all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement

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- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct,

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indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances
  - other machines
  - surrounding structures and facilities
  - trip hazards
  - underground services
  - use of tools and equipment
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

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Environmental requirements cover water quality management and may include:	• clean-up protection • stormwater protection • waste management.
Quality assurance requirements may include:	• Australian standards • Environment Protection Authority (EPA) • internal company quality assurance policy and risk management strategy • International Standards Organisation • site safety plan • workplace operations and procedures.
Tools and equipment may include:	• hand and power tools • test equipment.
Materials may include:	• fire pumpsets.
Fire system pumpsets may include:	• centrifugal • close coupled, long coupled with mechanical joints or belt driven by an electric or petrol and diesel motor • multi-stage turbine • positive displacement • submersible and electric and compression ignition driven pumps.
Pump controls may include:	• automatic, including float, level, flow or pressure switches • manual.

***Sustainability principles and concepts*:**	• cover the current and future social, economic and environmental use of resources
	• may include:
	  • efficient energy usage
	  • efficient water usage, harvesting and/or disposal.

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Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards, including AS2118 Automatic fire sprinkler systems
- safe work procedures relating to testing and commissioning fire system pumpsets
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPFS4024A Design residential and domestic fire sprinkler systems

Modification History

Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPFS4014A

Unit Descriptor

This unit of competency specifies the outcomes required to design domestic and residential fire sprinkler systems using hydraulic calculations.
It covers preparation for the work, determination of system requirements, detailed design and recording of system plans, and work finalisation processes.

Application of the Unit

Site location for work application will be domestic and residential, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for design process.	1.1	Nature and scope of design task are identified and confirmed.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with designing residential and domestic fire sprinkler systems are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Work is organised and sequenced in conjunction with others involved in or affected by the work.
		1.5	***Tools, equipment*** and ***materials*** required for designing ***domestic and residential fire sprinkler systems***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area in which the design process is to be conducted is prepared.
2	Determine system requirements.	2.1	***Information*** and specifications for the required work are obtained and confirmed, if necessary by site inspection.
		2.2	Regulations and standards relevant to the work are consulted and applied to all aspects of the work.
		2.3	Relevant data is extracted from plans and specifications.
		2.4	Building classification and hazard ratings are established according to standards and other relevant regulations.

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3	Design sprinkler system.	3.1	Water supply needs are established and graphs are drawn for the automatic fire sprinkler system.
		3.2	Pipework is sized to manufacturer specifications and standards using hydraulic calculations.
		3.3	Sprinkler system is designed to meet plans, specifications, standards, manufacturer recommendations and water supply data.
		3.4	Sprinkler heads are selected for appropriate size, spray pattern, temperature and finish.
		3.5	Sprinklers are spaced according to manufacturer specifications, standards and relevant ***statutory and regulatory authority*** regulations.
		3.6	Pipe layout drawings are prepared according to standards and workplace requirements.
		3.7	Computations and other supporting evidence are appropriately documented to support design.
		3.8	Materials required are specified and optimised according to standards from the proposed design.
		3.9	Fabrication sheets and material lists are prepared.
		3.10	Plans are recorded according to regulatory authorities' and workplace requirements.
		3.11	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
4	Restore work area.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment used in the design process are refurbished and left according to workplace procedures.
		4.3	Information is accessed and documentation, including work backup, is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- collecting design data, spacing sprinkler heads, and sizing and arranging pipework using hydraulic calculations
- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow and give instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - document computations and other supporting evidence
  - prepare fabrication sheets, material lists and other relevant workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
  - develop domestic and residential fire sprinkler system designs using hydraulic calculations
  - prepare layout drawings, fabrication sheets and material lists for system installation
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

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- calculating and measuring techniques and their application
- components and materials of fire suppression sprinkler systems and their operating characteristics
- design techniques and technology
- job safety analysis (JSA) and safe work method statements (SWMS)
- National Fire Protection Association (NFPA) and Factory Mutual performance-based codes of practice
- process of designing fire sprinkler systems
- processes for accessing information and for calculating material requirements
- properties of water, including pressure and flow rates
- relevant statutory requirements related to commissioning domestic and residential fire suppression sprinkler systems
- SI system of measurements
- standards applicable to the design
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to the design of domestic and residential fire sprinkler systems
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- using hydraulic calculations, designing a fire sprinkler system for a residential complex containing a minimum of a communal catering and living area and multiple residential quarters (or equivalent) and also a fire sprinkler system for a domestic residence containing a minimum of two rooms, ensuring:
  - application of sustainability principles and concepts
  - correct identification of location, design specification and details of proposed service
  - correct selection and use of appropriate processes, tools and equipment
  - completion of all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources

This competency is to be assessed using standard and authorised work practices, safety requirements and

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for assessment

environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace

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- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances
  - other machines
  - surrounding structure and facilities
  - trip hazards
  - underground services
  - use of tools and equipment

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- work site visitors and the public
- working at heights
- working in confined spaces
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Quality assurance requirements may include:

- Australian standards
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

***Tools and equipment* may include:**

- calculators
- design data
- design tables
- drawing and drafting equipment
- reference materials
- computers running appropriate computer-aided design (CAD) software.

Materials may include:

- drafting materials
- plans.

Domestic and residential fire sprinkler systems may include:

- actuating devices
- alarms
- control valve assemblies
- piping
- sprinkler heads.

Information may include:

- charts and hand drawings

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- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards, including AS2118 Automatic fire sprinkler systems
- safe work procedures relating to designing domestic and residential fire sprinkler systems
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient energy use
  - efficient use and recycling of material
  - selecting appropriate components (sprinkler head, pump, etc.) to ensure minimal environmental impact.

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Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPFS4025A Commission fire alarm and detection system interface devices

Modification History

Changes to unit title, descriptor, performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPFS4005A

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Unit Descriptor

This unit of competency specifies the outcomes required to commission fire alarm and detection interface systems. It covers preparation for the work, identification and confirmation of system specifications and requirements, physical testing and commissioning of the system interface devices, and work finalisation processes, including records and documentation.

Application of the Unit

This unit of competency supports the needs of experienced tradespeople with responsibility for testing and commissioning fire alarm and detection system interface devices.
Site location for work application may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

The skills and knowledge described in this unit require a licence to practise in a workplace where plant and equipment interface devices operate at voltages above extra low voltage (e.g. 50 V a.c. or 120 V d.c.). However other conditions may apply in some jurisdictions subject to regulations related to electrical and plumbing work. Practice in the workplace and during training is also subject to regulations directly related to work health and safety and where applicable contracts of training, such as apprenticeships.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) requirements associated with the workplace environment and commissioning fire alarm and detection system interface devices are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	***Tools and equipment*** for ***commissioning fire alarm and detection system interface devices***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient commissioning process.
		1.7	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
2	Identify system requirements.	2.1	System design requirements are identified and confirmed from job specifications and according to ***relevant standards***.
		2.2	Requirements of fire alarm and detection system commissioning are identified according to relevant Australian standards, ***statutory and regulatory authorities'*** requirements and job specifications.
3	Test and commission system.	3.1	Fire alarm and detection system interface devices are checked to ensure type and installation conform to relevant Australian standard, job specifications, manufacturer recommendations and authorities' requirements.
		3.2	Operation of system interface devices is tested according to job specifications, manufacturer recommendations

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			and authorities' requirements and adjusted as required.
		3.3	System interface devices are commissioned and maintained to ensure correct operation according to relevant standards, and manufacturer and job specifications.
4	Clean up work area.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specifications.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	Information is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow and give instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to able to coordinate and action tasks, work with others and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - disconnect and reconnect system interface devices and associated wiring
  - reconfirm operation of control and indicating equipment (CIE)
  - use mobile communication technology

Required knowledge

- components and materials of fire alarm and detection system interface devices
- correct location and setting of interface devices to meet system design standards
- difference between extra low voltage and low voltage system interface wiring connection

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- job safety analysis (JSA) and safe work method statements (SWMS)
- process of installing, testing and commissioning fire alarm and detection system interface devices
- properties of water, including pressure and flow rates
- relevant statutory requirements related to commissioning fire alarm and detection system interface devices, including automatic smoke and heat venting systems, air handling systems, and emergency warning and intercommunication systems
- SI system of units
- sources of information and processes for calculating suitable replacement of interface devices
- standards applicable to the service
- systems operations and procedures
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

It may be assessed on its own or as part of an integrated assessment activity involving preparing, planning and conducting system commissioning procedures for one fire alarm and detection system and completing all associated documentation.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to commissioning fire alarm and detection system interface devices
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- commissioning one fire alarm and detection system interface device, including one pressure switch and one flow switch, plus an actuator and a control and indicating panel, ensuring:
  - applying sustainability principles and concepts
  - correctly identifying location, design specification and details of the system
  - correctly selecting and using appropriate processes, tools and equipment
  - completing all work to specification
  - complying with regulations, standards and organisational quality procedures and processes.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and

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environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace

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- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials, including hazardous materials and substances
- hazard control
- personal protective equipment, including that prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - other machines
  - surrounding structure and facilities
  - trip hazards
  - underground services
  - use of tools and equipment

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- work site visitors and the public
- working at heights
- working in confined spaces
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Quality assurance requirements may include:

- Environment Protection Authority
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:

- hand and power tools
- test equipment.

***Commissioning fire alarm and detection system interface devices*:**

- may include verifying interface device operations, including:
  - alarm volume
  - annunciators
  - audible, visible and combination alarms
  - controls
  - coordination of alarm signals with other services
  - dispatching systems
  - public reporting systems
  - signal transmission
  - tactile alarm appliances for people with disabilities
  - zone alarms
- interface devices may include:
  - pressure switches
  - flow switches
  - actuators
  - solenoids
  - valve monitoring devices.

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Sustainability principles and concepts:	• cover the current and future social, economic and environmental use of resources
	• may include:
	  • efficient energy usage
	  • efficient water usage, including harvesting and disposal.

Relevant standards may include:	• AS1670.1 Fire detection, warning, control and intercom systems – System design, installation and commissioning – Fire • AS2118.1 Automatic fire sprinkler systems Part 1 – General requirements • AS1851 Maintenance of fire protection systems and equipment.
Statutory and regulatory authority include:	• commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPFS4026A Commission firefighting appliances

Modification History

Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Detailed licensing information included
Not equivalent to CPCPFS4006A

Unit Descriptor

This unit of competency specifies the outcomes required to commission firefighting appliances.
It covers preparation for the work, identification and confirmation of system specifications and requirements, physical testing and commissioning of appliances, and work finalisation processes, including records and documentation.

Application of the Unit

This unit of competency supports the needs of experienced tradespeople with responsibility for testing and commissioning firefighting appliances.
Site location for work application may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) requirements associated with workplace environment and commissioning firefighting appliances are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	***Tools and equipment*** for ***commissioning firefighting appliances***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient commissioning process.
2	Identify system requirements.	2.1	Equipment requirements are identified and confirmed from job specifications and according to ***relevant standards***.
		2.2	Requirements of firefighting appliance commissioning are identified according to standards, ***statutory and regulatory authorities'*** requirements and job specifications.

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3	Test and commission system.	3.1	Firefighting appliances are checked to ensure type and installation conform to standards, job specifications, manufacturer recommendations and authorities' requirements.
		3.2	Operation of appliances is tested according to standards, job specifications, manufacturer recommendations and authorities' requirements and is adjusted as required.
		3.3	Appliances are commissioned and maintained to ensure correct operation according to standards, and manufacturer and job specifications.
		3.4	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
4	Clean up work area.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	Information is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow and give instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- Australian standards applicable to relevant appliances
- components and materials of firefighting equipment and appliances
- job safety analysis (JSA) and safe work method statements (SWMS)
- pressure requirements of hose reel systems
- process of installing, testing and commissioning firefighting equipment and appliances
- relevant statutory requirements related to commissioning firefighting equipment and appliances

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- SI system of units
- sources of information and processes for the calculation of requirements
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

It may be assessed on its own or as part of an integrated assessment activity involving preparing, planning and conducting commissioning procedures for firefighting appliances for a residential building of four storeys and completing all associated documentation.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to the commissioning of firefighting appliances
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- commissioning firefighting appliances, including portable fire appliances, wheeled fire extinguishers, delivery lay flat hose and fire hose reel systems, ensuring:
  - application of sustainability principles and concepts
  - correctly identifying location, design specification and details of system
  - correctly selecting and using appropriate processes, tools and equipment
  - completing all work to specification
  - complying with regulations, standards and organisational quality procedures and processes.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and

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environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace

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- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials, including hazardous materials and substances
- hazard control
- personal protective equipment, including that prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - other machines
  - surrounding structure and facilities
  - trip hazards
  - underground services
  - use of tools and equipment

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- work site visitors and the public
- working at heights
- working in confined spaces
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Quality assurance requirements may include:

- Environment Protection Authority
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:

- hand and power tools
- test equipment.

Commissioning firefighting appliances covers testing and commissioning firefighting appliances, including:

- delivery lay flat fire hose
- fire blankets
- fire hose reel systems
- portable fire appliances
- wheeled fire extinguishers.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Relevant standards may include:

- AS/NZS1841 Portable fire extinguishers - general requirements
- AS/NZS1850 Portable fire extinguishers – classification, rating and performance testing
- AS1851 Maintenance of fire protection systems and equipment
- AS2441 Installation of fire hose reels
- AS2444 Portable fire extinguishers and blankets -selection and location
- AS/NZS3504 Fire blankets
- AS3565 Meters for water supply

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- AS4077 Fire protection – fire extinguishing media: halogenated hydrocarbons
- AS4078 Fire protection – fire extinguishing media: carbon dioxide
- AS4265 Wheeled fire extinguishers
- AS/NZS4353 Portable fire extinguishers – aerosol type.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient energy usage
  - disposing of waste material to ensure minimal environmental impact
  - efficient use and recycling of material.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPFS4027A Commission fire sprinkler systems

Modification History

New unit.
This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

Unit Descriptor

This unit of competency specifies the outcomes required to commission fire sprinkler systems. It covers preparing for the work, identifying and confirming system specifications and requirements, physically testing and commissioning systems, and finalising work processes, including completing records and documentation.

Application of the Unit

This unit of competency supports the work of fire protection industry personnel responsible for commissioning fire sprinkler systems.
Work may be undertaken on commercial or industrial buildings, which may be new work sites or existing structures being renovated, extended, restored or maintained.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this unit. Candidates are advised to check for those requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for commissioning fire sprinkler systems.	1.1	***Commissioning inspections and tests required to validate that fire sprinkler system performance meets design requirements are determined in consultation with approving authority.***
		1.2	***Documentation*** required for commissioning is obtained and reviewed.
		1.3	Tasks are planned according to ***industry, legislative and workplace requirements*** and sequenced in conjunction with others involved in or affected by the work.
		1.4	***Tools, equipment*** and materials for commissioning are selected and checked for serviceability.
		1.5	Work area is prepared to support efficient commissioning process.
2	Confirm that installation of system components correspond to design requirements.	2.1	***Fire sprinkler system components*** and locations are identified on drawings and specifications.
		2.2	Building is inspected to confirm that locations of system components correspond to design requirements, or location anomalies are reported.
		2.3	Types of sprinkler heads are confirmed as compatible, or anomalies are reported.
		2.4	Spaces between sprinkler heads are confirmed as correct, or anomalies are reported.
		2.5	Pipework is inspected and confirmed as functional, or jointing and supporting defects are reported.

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		2.6	Valves are inspected for different commissioning tests to confirm correct type, adequate labelling, and orientation in required position.
		2.7	Pressure gauge schedule, block plan and interface diagram are confirmed as corresponding to design requirements.
		2.8	Water supply components, including any installed pumpsets, are checked and verified against design requirements.
		2.9	Changes to the building or existing conditions that could affect component performance are identified.
3	Conduct pressure tests and restore system to normal pressure.	3.1	Static air-pressure test is conducted to confirm integrity of the system, and results are recorded according to relevant standards and workplace requirements.
		3.2	High pressure hydraulic test is conducted to confirm integrity of the system, and results are recorded according to relevant standards and workplace requirements.
		3.3	Leaks are identified and reported.
		3.4	System is drained and re-charged at normal pressure according to relevant standards and workplace requirements.
4	Conduct functional tests.	4.1	Water supply functional proving test is conducted, and results are recorded according to relevant standards.
		4.2	***Functional tests*** of system components and interfaces are conducted, and results recorded according to relevant standards and design requirements.
		4.3	Tests are conducted according to environmental and sustainability requirements.
5	Finalise commissioning process.	5.1	System functionality and compliance with design specifications are confirmed.
		5.2	Componentry is set to operational function and pipework is charged with water according to specifications.

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5.3 Tools, equipment and materials are checked and stored and work area is left in good order.

5.4 Documentation is completed and processed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - determine commissioning test requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - follow and give instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
  - identify and report faults in tools, equipment or materials to appropriate personnel
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks in consultation with other relevant personnel
  - set out work
- reading skills to interpret drawings and specifications
- teamwork skills to work with others to action tasks
- technical skills to use tools and equipment to commission sprinkler systems
- technology skills to:
  - access site-specific instructions in a variety of media
  - use mobile communication technology
- writing skills to record results of functional tests and complete other workplace documentation

Required knowledge

- design and installation performance requirements of relevant installation standards, such as:
  - National Fire Protection Association (NFPA)
  - Factory Mutual performance-based codes of practice
  - Australian Standard AS 2118.1 Automatic fire sprinkler systems
- industry and regulatory requirements for commissioning fire sprinkler systems
- job safety analyses (JSA), safety data sheets (SDS) and safe work method statements (SWMS)
- performance measures for fire sprinkler systems as referenced in design drawings and specifications
- properties of water, including pressure, flow rates and atmospheric pressure

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- SI system of measurements
- standards applicable to installing and commissioning fire sprinkler systems
- workplace and equipment safety requirements, including personal protective equipment requirements relevant to the job

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- locate, interpret and apply relevant information, standards and specifications to testing and commissioning fire sprinkler systems
- apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- as a minimum, the ability to commission:
  - one wet system connected to fixed pumpsets
  - one wet system connected to town main supply
  - one pre-action fire sprinkler system
- commissioning must ensure:
  - correct identification of location, design specification and details of proposed system
  - correct selection and use of appropriate processes, tools and equipment
  - completion of work to specification
  - compliance with regulations, standards and workplace quality procedures and processes
  - effective communication with others
  - safe work practices.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure

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- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- safety data sheets, job safety analyses and safe work method statements
- research resources, including industry-related systems information.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using one or more of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to identify and interpret the essential underpinning knowledge required for practical application.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Fire sprinkler systems may include:

- deluge
- dry pipe
- pre-action

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- storage sprinklers
- wall wetting
- water mist
- wet pipe.

Approving authority may be:

- client representative
- council representative
- fire brigade official
- fire protection consultant engineer
- insurance company representative
- system designer.

Documentation may include:

- as-installed drawings
- design calculations
- logbooks
- operator manuals.

Industry, legislative and workplace requirements may include:

- codes and standards
- environmental and sustainability
- licensing
- quality assurance
- workplace health and safety.

Tools and equipment may include:

- digital tachometers
- flow testing equipment
- hand tools
- laser levels
- measuring devices
- personal protective equipment
- pressure gauges.

Fire sprinkler system components may include:

- air compressors
- alarm valves
- ball valves
- brackets
- discharge nozzles
- flow switches
- pipework
- pressure gauges
- pressure reducing valves
- pressure relief valves
- pressure switches
- pumpsets
- solenoids
- sprinkler heads
- water supply valves.

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Functional tests may include checking the effective operation of:

- brigade booster connections
- control and actuator mechanisms, such as:
  - pressure switches
  - flow switches
- control valves, such as:
  - pressure reducing
  - pressure relief
  - tank inflow
- interfaces to other systems, including:
  - booster pumps
  - building services
  - control indicating equipment (CIE)
  - control of booster pumpsets
  - fire detection
  - heating, ventilation and air conditioning (HVAC)
  - occupant warning systems
  - valve monitoring controls
- remote water proving points
- water supply components, such as tank infill and suction lines.

Unit Sector(s)

Plumbing and services

Custom Content Section

Not applicable.

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CPCPFS5010A Design fire-compliant hydraulic services

Modification History

Changes to descriptor, performance criteria, required skills, range statement and critical aspects
Not equivalent to CPCPFS5000A

Unit Descriptor

This unit of competency specifies the outcomes required to design fire protection systems for hydraulic services in wide span and high-rise buildings. The fire protection systems ensure that hydraulic services maintain integrity, insulation and structural adequacy in case of fire.

Application of the Unit

This unit of competency supports development of skills and knowledge required for competent workplace performance of experienced tradespeople in a consultancy or supervisory capacity in relation to fire-compliant hydraulic service design.
It involves interpretation of plans and specifications and the design, detailing and documentation of fire-compliant hydraulic services for applications including residential, commercial and industrial and may be for new projects or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Evaluate design parameters.	1.1	Fire and non fire-rated compartments of buildings are evaluated and the application of evaluation to hydraulic services is specified.
		1.2	***Design requirements*** are determined from plans, specifications and client brief.
		1.3	***Cost-benefit analysis*** is conducted, comparing a range of pipe materials, system designs and penetration protection systems.
		1.4	***Statutory, regulatory, Australian and New Zealand standards and relevant building code requirements*** for the design of fire-compliant hydraulic services are interpreted and applied.
		1.5	***Manufacturer requirements*** and trade and technical manuals are interpreted and applied.
		1.6	Additional research, including a ***desktop study***, is conducted and ***performance requirements*** are established.
2	Plan and detail system components.	2.1	***Layout of pipework systems*** and type and location of ***fire check materials*** are planned.
		2.2	Approved ***fire-rated materials***, ***penetration techniques***, ***insulation and filler materials*** are specified to

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			appropriate ***fire-resistance level***.
		2.3	***Pipe fixings*** are designed for a range of applications.
		2.4	Pipework for sprinklered and non-sprinklered areas is designed for a range of applications.
		2.5	***Installation requirements*** are specified.
		2.6	***Compliance inspection*** is conducted.
3	Design and size systems.	3.1	Fire-compliant hydraulic services are designed for a range of wide span and high-rise building applications.
		3.2	Range of ***fire-compliant duct systems*** is designed using ***fire-rated building materials***.
		3.3	Hydraulic services using non fire-rated materials are designed to comply with building fire ratings.
		3.4	Fire-compliant hydraulic distribution systems are designed and sized using computer software packages.
		3.5	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process**.**
4	Prepare documentation.	4.1	***Plans*** are prepared and detailed for a range of fire-compliant hydraulic services.
		4.2	***Specification*** for fire-compliant hydraulic services is prepared.
		4.3	***Compliance report*** is prepared.
		4.4	***Operation and maintenance manual*** is produced.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow and give instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to:
  - develop creative and responsive approaches
  - identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - read and interpret drawings, specifications and documentation from a variety of sources, including:
    - Australian standards
    - National Construction Code
    - WHS and environmental requirements
    - plumbing regulations
  - prepare written documentation, including:
    - operation and maintenance manual
    - plans, specifications and reports
- numeracy skills to:
  - apply measurements and calculations
  - interpret data
- planning and organising skills to:
  - plan and sequence tasks with others
  - research, collect, organise and understand information relating to the design of fire-compliant hydraulic systems
  - take initiative and make decisions
- problem-solving skills to:
  - analyse requirements
  - consider options

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    - design an appropriate system
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
    - apply design principles relating to hydraulic systems
    - use tools and equipment, including:
        - computer-aided design (CAD) software
        - drawing instruments
        - measuring equipment
- technology skills to:
    - access and understand site-specific instructions in a variety of media
    - use mobile communication technology

Required knowledge

- requirements of state regulatory authorities, Australian standards and manufacturer specifications
- application of terminology, definitions, installation methods and hazards identified in relation to devices and systems used, according to:
    - AS/NZS3500 National plumbing and drainage
    - environmental requirements
    - manual of authorisation procedures for plumbing and drainage products (MP52)
    - other standards, codes or standard operating procedures
- quality assurance requirements, including:
    - Environment Protection Authority
    - internal company quality assurance policy and risk management strategy
    - International Standards Organisation
    - nature of materials used and effects of performance under various conditions
    - site safety plan
    - workplace operations and procedures
- variety of applications of technology principles in design of fire-compliant hydraulic services for all classes of building
- workplace safety requirements, including relevant statutory regulations, codes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

It may be assessed on its own or as part of an integrated assessment activity involving preparing designs and associated documentation for fire-compliant hydraulic services for two different categories of wide span and high-rise buildings.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- evaluating and documenting design parameters, including client, regulatory, manufacturer, NCC and Australian and New Zealand standard requirements for a range of fire-compliant hydraulic services
- planning and detailing system components, including:
  - applying sustainability principles and concepts
  - conducting a compliance inspection
  - designing fire-compliant hydraulic systems
  - designing fire-compliant systems for fire-rated materials
  - designing fire-compliant systems for non fire-rated materials
  - ducts
  - fire check collars
  - insulation and filler materials
  - penetrations
  - preparing a compliance report
  - preparing a specification for fire-compliant hydraulic services
  - preparing an operation and maintenance manual.

Context of and specific resources

This competency is to be assessed using standard and

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for assessment

authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace

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- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Design requirements may include:

- architectural specifications
- builder specifications
- design of fire-compliant hydraulic services should ensure that hydraulic services maintain the integrity, insulation and structural adequacy of a building in case of fire.
- owner requirements
- specialist design applications.

Cost-benefit analysis includes:

- comparison of range of suitable materials and system choices available to enable cost-effective choices to be made without compromising the integrity of the project.

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Statutory, regulatory, Australian and New Zealand standards and relevant building code requirements may include:	• AS/NZS3500 National plumbing and drainage
	• manual of authorisation procedures for plumbing and drainage products (MP52)
	• material and authorisation standards specified by:
	  • statutory plumbing authority
	  • local authority
	  • National Construction Code (NCC)
	• relevant Acts, regulations and local and state government policies
	• relevant fire standards.

Manufacturer requirements may include:	• material specifications • technical and trade manuals.

Desktop study may include:	• collection and interpretation of existing data for design purposes from:
	  • architectural and building plans
	  • council requirements
	  • developer requirements
	  • regulatory requirements
	  • environmental, social and economic considerations
	  • other documents and reports as appropriate.

Performance requirements may include:	• Australian and New Zealand standards • NCC requirements • local authority performance requirements • site and application specific performance requirements.

Layout of pipework systems:	• may include:
	  • car park systems
	  • concealed pipework
	  • duct systems
	  • exposed pipework
	  • fire-rated pipework
	  • non fire-rated pipework

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- sprinklered and non-sprinklered areas
- should have principles of economy, serviceability, durability and fit for use applied.

Fire check materials may include:

- fire pillows
- fire-rated sealants
- smoke seals
- range of intumescent collars.

Fire-rated materials may include:

- fittings
- pipework
- valves.

Penetration techniques may include:

- concrete floors
- fire and smoke doors
- fire dampers
- galvanised decking systems
- ply formwork systems
- post and pre-tensioned concrete flooring systems
- pre-cast flooring systems.

Insulation and fill materials may include:

- caulking compounds
- fibreglass
- fire pillows
- foams
- proprietary fill materials
- rock wool.

Fire-resistance level may include:

- insulation
- integrity
- structural adequacy.

Pipe fixings may include fire and load-rated:

- bedding and thrust blocks
- corrosion protection
- cover
- masonry fixing
- material requirements
- pipe supports spacings and locations

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	• vertical support fixing.
Installation requirements may include:	• corrosion and element protection • installation details • jointing requirements • supports • workmanship and quality control.
Compliance inspection may include checking that:	• approved materials appropriate to fire-rated compartments and required fire-resistance level are used • clipping and insulation comply with regulatory requirements • fire compartments are not compromised by hydraulic services • installation is appropriate for the fire-resistance level.
Fire-compliant duct systems may include:	• brick • concrete • masonry • plasterboard.
Fire-rated building materials may include:	• brick • concrete • masonry • plasterboard • other building materials as applicable.

Sustainability principles and concepts:	• cover the current and future social, economic and environmental use of resources
	• may include:
	  • selecting appropriate material to ensure minimal environmental impact
	  • efficient use of material
	  • efficient energy usage
	  • efficient use and recycling of material
	  • disposing of waste material to ensure minimal environmental impact

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- efficient water usage, harvesting and/or disposal
- lifecycle cost-benefit analysis
- consideration of the Green Building Council of Australia rating scheme.

Plans:

- may include:
  - axonometrics
  - cross-sections
  - details
  - elevations
  - isometrics
  - sections
- schematics, which may be produced using:
  - computer generation
  - drawing equipment.

Specification may include:

- jointing
- manufacturer
- materials
- supports and specialised components
- valve selection
- workmanship and quality control.

Compliance report may include:

- conclusions
- documentation of the compliance inspection
- evaluation of findings.

Operation and maintenance manual may include:

- detailed alternative (fire-engineered) solutions
- maintenance requirements
- system plans
- yearly inspection requirements.

Unit Sector(s)

Functional area

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Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPFS5011A Design fire sprinkler systems

Modification History

Changes to performance criteria, required skills, range statement and critical aspects
Not equivalent to CPCPFS5001A

Unit Descriptor

This unit of competency specifies the outcomes required to design and size fire sprinkler systems and to detail and specify the layout, materials, components, water storage requirements, and flow and pressure requirements for fire sprinkler systems in buildings.

Application of the Unit

This unit of competency supports the needs of experienced tradespeople responsible for designing fire sprinkler systems.
Site location for work application may be for new projects or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Evaluate design parameters.	1.1	***Scope of work*** is established for design of fire sprinkler systems for wide span and high-rise building projects.
		1.2	***Design requirements*** are determined from plans, specifications and client brief.
		1.3	***Cost-benefit analysis*** is conducted comparing a range of pipe materials and system designs.
		1.4	***Fire department, statutory, regulatory, Australian and New Zealand standards and relevant building code requirements*** for the design of fire sprinkler systems are interpreted and applied.
		1.5	***Manufacturer requirements*** and trade and technical manuals are interpreted and applied.
		1.6	Flow and pressure requirements are established, ***flow and pressure tests*** are conducted and council main flows and pressures are established.
		1.7	Additional research, including a ***desktop study***, is conducted and ***performance requirements*** are established.

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2	Plan and detail system components.	2.1	***Layout of pipework systems*** and type and location of ***fittings and valves*** are planned.
		2.2	Type, location and requirements for ***backflow prevention devices*** and ***alarm and valve assemblies*** are detailed.
		2.3	Pipe sizes, velocities, flows and pressures are ***calculated*** for a range of applications.
		2.4	Approved ***materials***, ***jointing methods*** and sprinkler heads for fire sprinkler systems are specified.
		2.5	Smoke alarm systems, ***booster assemblies***, booster relay and jacking pumps are designed and detailed.
		2.6	***Pipe fixings*** are designed for a range of applications.
		2.7	***Water storage systems*** and ***pump, pump controls and pumproom requirements*** are sized and detailed.
		2.8	***Test points and associated drainage systems*** are designed and sized.
		2.9	***Installation requirements*** are specified.
3	Design and size systems.	3.1	Fire sprinkler systems are designed for a range of wide span and high-rise building applications.
		3.2	Combined water supply, fire hydrant and hose reel and sprinkler systems are designed for a range of wide span and high-rise building applications.
		3.3	Sprinkler systems for Grades 1, 2 and 3 water supplies are designed.
		3.4	Range of ***sprinkler system configurations*** is designed.
		3.5	Fire sprinkler systems are designed and sized using computer software packages.
		3.6	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.

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4	Prepare documentation.	4.1	***Plans*** are prepared and detailed for a range of fire sprinkler systems.
		4.2	***Specification*** for a fire sprinkler system is prepared.
		4.3	***Testing*** and ***commissioning schedule*** is prepared.
		4.4	***Operation and maintenance manual*** is produced.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow and give instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to:
  - develop creative and responsive approaches
  - identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - read and interpret plans, specifications and documentation from a variety of sources, including:
    - Australian standards
    - National Construction Code
    - WHS and environmental requirements
    - plumbing regulations
  - prepare written documentation, including:
    - operation and maintenance manual
    - plans, specifications and reports
- numeracy skills to:
  - apply measurements and calculations
  - interpret data
- planning and organising skills to:
  - plan and sequence tasks with others
  - research, collect, organise and understand information relating to the design of fire sprinkler systems
  - take initiative and make decisions
- problem-solving skills to analyse requirements, carry out tests, consider options and design an appropriate system
- teamwork skills to work with others to action tasks and relate to people from a range of

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cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
  - apply design principles relating to hydraulic systems
  - use tools and equipment, including drawing instruments, measuring equipment and computer-aided design (CAD) software
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- requirements of state regulatory authorities, Australian standards and manufacturer specifications, including:
  - AS/NZS2118 Automatic fire sprinkler systems – general requirements
  - AS/NZS3500 National plumbing and drainage
  - AS2200 Design charts for water supply and sewerage
  - environmental requirements
  - hazards associated with devices and systems used in the hydraulic sector
  - installation methods used in hydraulic systems
  - other standards, codes or standard operating procedures
  - terminology and definitions used in hydraulic design
- quality assurance requirements, including:
  - Environment Protection Authority
  - internal company quality assurance policy and risk management strategy
  - International Standards Organisation
  - nature of materials used and effects of performance under various conditions
  - site safety plan
  - workplace operations and procedures
- variety of applications of technology principles in design of fire sprinkler, hydrant and hose reel systems for all classes of building
- workplace safety requirements, including relevant statutory regulations, codes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

It may be assessed on its own or as part of an integrated assessment activity involving preparing designs and associated documentation for fire sprinkler systems for two different categories of wide span and high-rise buildings.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- evaluating and documenting design parameters, including client, fire authority, regulatory, manufacturer, NCC and Australian and New Zealand standard requirements for a range of fire sprinkler systems
- planning and detailing system components, including:
  - applying sustainability principles and concepts
  - alarm and valve assemblies
  - preparing a specification for a fire sprinkler system
  - preparing a testing and commissioning schedule
  - preparing an operation and maintenance manual
  - preparing plans for a range of fire sprinkler systems
  - sprinkler heads
  - water storage systems.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will

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usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must

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relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Scope of work includes:

- interpretation of plans and specifications
- sizing and documenting layout of fire sprinkler systems for applications, including residential, commercial and industrial.

Design requirements may include:

- architectural specifications
- builder specifications
- owner requirements
- relevant statutory authorities
- specialist design applications.

Cost-benefit analysis may include:

- comparison of range of suitable materials and system choices available to enable cost-effective choices to be made without compromising project

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	integrity.

Fire department, statutory, regulatory, Australian and New Zealand standards and relevant building code requirements may include:	• relevant Acts, regulations and local and state government policies
	• AS/NZS2118 Automatic fire sprinkler systems - general requirements
	• AS2419 Fire hydrant installations – system design, installation and commission
	• material and authorisation standards specified by:
	  • National Construction Code (NCC)
	  • statutory authorities.

Manufacturer requirements may include:	• material specifications and standards • pump tables • sizing tables • sprinkler heads and components • technical and trade manuals.
Flow and pressure tests may include:	• results of flow and pressure tests conducted by a contractor • on-site measurement of flow (l/s) and pressure (kPa).

Desktop study may include:	• collection and interpretation of existing data for design purposes from:
	  • architectural and building plans
	  • council requirements
	  • developer requirements
	  • regulatory requirements
	  • environmental, social and economic considerations
	• other documents and reports as appropriate.

Performance requirements may include:	• flow, velocity, pressure and discharge requirements, established using Australian and New Zealand standards and local statutory authorities' plans.
Layout of pipework systems:	• may include: • appropriate water supply

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- grid systems
- ring main
- tree system
- should have principles of economy, serviceability, durability and fit for use applied.

Fittings and valves may include:

- fittings:
  - mechanical fittings
  - bends
  - elbows
  - tees
  - unions
- valves:
  - backflow prevention
  - pressure relief
  - isolating
  - pressure limiting
  - pressure reduction
  - strainers
  - water-saving devices.

Backflow prevention devices:

- may be testable or non-testable devices and installed as:
  - individual protection
  - zone protection
  - containment protection.

Alarm and valve assemblies may include:

- wet
- dry
- deluge
- pre-action
- mechanical and electrical alarms
- ancillaries and trims.

Calculations may include:

- hazard classification
- hydraulic
- pressure and flow
- density of discharge
- velocity

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- volume
- friction
- area of operation (including shapes).

Materials may include:

- chlorinated polyvinyl chloride (CPVC)
- copper
- steel
- fittings and fixtures
- other approved materials.

Jointing methods may include:

- silver braze
- welded
- solvent welded
- flanged
- mechanical joints
- threaded
- other approved methods of jointing.

Booster assemblies may include:

- cabinet and block plans
- non-return and isolating valves
- fire appliance (hard stand) access
- pressure gauges
- appropriate booster assembly.

Pipe fixings may include fire and load rated:

- masonry fixing
- vertical support fixing
- pipe supports spacings and locations
- bedding and thrust blocks
- corrosion protection
- cover
- material requirements.

Water storage systems may include:

- automatic controls
- inlet valve design and sizing
- outlet valve design and sizing
- overflow requirements
- safe tray requirements
- tank sizes
- vortex plates

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	• tank siting.
Pump, pump controls and pumproom requirements may include:	• manual and/or automatic controls • inlet and outlet design requirements • installation and mounting requirements • pump selection • space requirements • electrical supply requirements • valve requirements • ventilation requirements • heating • exhaust extraction.
Test points and associated drainage systems may include:	• design and sizing of collection points and tundishes to prevent spillage, overflow and damage to building finishes • design and sizing of drainage systems to cater for maximum flow conditions • specification of materials for systems, including copper, polyvinyl chloride (PVC) and galvanised piping • other approved materials.
Installation requirements may include:	• corrosion and elements protection • installation details • jointing requirements • supports • workmanship and quality control.
Sprinkler system configurations may include:	• deluge • drencher • dry • pre-action • special hazard • wet.
Sustainability principles and concepts:	• cover the current and future social, economic and environmental use of resources • may include: • selecting appropriate material to ensure minimal

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environmental impact
- efficient use of material
- efficient energy usage
- efficient use and recycling of material
- disposing of waste material to ensure minimal environmental impact
- efficient water usage, harvesting and/or disposal
- life cycle cost-benefit analysis
- consideration of the Green Building Council of Australia rating scheme.

Plans may include:

- axonometrics
- cross-sections
- details
- elevations
- isometrics
- schematics, which may be produced using:
  - computer generation
  - drawing equipment
- sections
- submission for client approval
- pipework fabrication sheets and stores lists
- service coordination.

Specification may include:

- support and specialised components
- jointing
- manufacturer
- materials
- valve selection
- quality control/workmanship.

Testing may include:

- air pressure test
- hydrostatic test
- flush system
- quality assurance (QA) audit.

Commissioning schedule may include:

- direct inspection
- flow test
- system operation.

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Operation and maintenance manual may include:

- hydraulic calculations and water supply details
- as installed drawings
- relevant standards of maintenance of all maintainable equipment
- manufacturer data
- system description and operating instructions
- certificate reference.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPFS5012A Design fire hydrant and hose reel systems

Modification History

Changes to performance criteria, required skills, range statement and critical aspects
Not equivalent to CPCPFS5002A

Unit Descriptor

This unit of competency specifies the outcomes required to design fire hydrant, hose reel and storage systems to Australian and New Zealand standards, the National Construction Code (NCC) and other relevant legislative requirements in order to meet fire protection standards.

Application of the Unit

This unit of competency supports development of skills and knowledge required for competent workplace performance in a consultancy or supervisory capacity in relation to plumbing services and construction hydraulics.

Licensing/Regulatory Information

The design of fire hydrants, hose reels and storage systems must comply with Australian and New Zealand standards, the National Construction Code (NCC) and other relevant legislative requirements in order to meet fire protection standards.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Evaluate design parameters.	1.1	***Scope of work*** is established for fire hydrants, hose reels and distribution systems for wide span and high-rise building projects.
		1.2	***Design requirements*** are determined from plans, specifications and client brief.
		1.3	***Cost-benefit analysis*** is conducted comparing a range of pipe materials and system designs.
		1.4	Fire department, ***statutory and regulatory requirements*** and ***Australian and New Zealand standards*** for the design of fire hydrants, hose reels and distribution systems are analysed, interpreted and applied.
		1.5	***Manufacturer requirements*** and trade, technical and sizing manuals are interpreted.
		1.6	Additional research, including a ***desktop study***, is conducted to outline design parameters.
		1.7	***Flow and pressure tests*** are conducted.
		1.8	***Performance requirements*** are established.
2	Plan and detail system components.	2.1	***Layout of pipework*** and type and location of ***fittings and valves*** are planned.
		2.2	Type, location and requirements for backflow prevention devices are detailed.
		2.3	Pipe sizes, velocities, flows and pressures are calculated for a range of applications.

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		2.4	Approved ***materials***, ***jointing methods*** and ***installation requirements*** are specified.
		2.5	Hydrant ***booster, standpipe*** and ***hose reel assemblies*** are detailed.
		2.6	***Thrust blocks*** are designed for a range of applications.
		2.7	***Pipe fixings*** are designed for a range of applications.
		2.8	***Pump, pump controls and pumproom requirements*** are sized and detailed.
		2.9	***Water storage systems*** are designed and detailed.
3	Design and size systems.	3.1	Fire hydrant and hose reel systems are designed for a range of wide span and high-rise building applications.
		3.2	Combined water supply, fire hydrant, hose reel and sprinkler systems are designed for a range of wide span and high-rise building applications.
		3.3	Range of ***delivery systems*** is designed.
		3.4	Fire hydrant and hose reel systems are designed and sized using computer software packages.
		3.5	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
4	Prepare documentation.	4.1	***Plans*** are prepared for a range of fire hydrant and hose reel systems.
		4.2	Block plan is prepared for booster cabinet according to Australian and New Zealand standards.
		4.3	***Specification*** for a fire hydrant and hose reel system is prepared.
		4.4	***Testing*** and ***commissioning schedule*** is prepared.
		4.5	***Operation and maintenance manual*** is produced.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to:
  - develop creative and responsive approaches
  - identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - prepare written documentation, including:
    - operation and maintenance manual
    - plans, specifications and reports
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to:
  - apply measurements and calculations
  - interpret data
- planning and organising skills to:
  - research, collect, organise and understand information relating to the design of fire-compliant hydraulic systems
  - take initiative and make decisions
- problem-solving skills to:
  - analyse requirements
  - carry out tests
  - consider options
  - design an appropriate system
  - identify typical faults and action required to rectify problems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to apply design concepts and principles relating to hydraulic systems

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- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- Australian and New Zealand standards, manufacturer specifications, NCC and other applicable codes or standard operating procedures relevant to the sector
- hazards associated with devices and systems used in the hydraulic sector
- installation methods used in hydraulic systems
- nature of materials used and effects of performance under various conditions
- terminology and definitions used in hydraulic design
- workplace safety requirements, including relevant statutory regulations, codes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

It may be assessed on its own or as part of an integrated assessment activity involving effective performance and application of principles used to design fire hydrant and hose reel systems.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- establishing and evaluating design parameters for a range of fire hydrant and hose reel systems
- planning system components for a range of fire hydrant and hose reel systems, including:
  - application of sustainability principles and concepts
  - booster assemblies
  - hose reels
  - hydrants
  - storage tanks
  - thrust blocks
- complying with WHS regulations applicable to workplace operations
- applying organisational quality procedures and processes within context of restoring plastered surfaces to conservation requirements
- designing and sizing a range of fire hydrant and hose reel systems
- developing a checklist with all information and formulas required to carry out flow and pressure tests
- preparing plans for a range of fire hydrant and hose reel systems
- preparing a specification for a fire hydrant and hose reel system
- preparing a testing and commissioning schedule

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- producing an operation and maintenance manual
- communicating with others to ensure safe and effective work site operations.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

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Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Scope of work may include:

- interpretation of plans and specifications
- sizing and documenting layout of fire hydrant and hose reel systems, including:
  - combined fire sprinkler, hydrant and hose reel systems
  - combined hydrant and hose reel systems
  - emergency egress
  - separate hydrant and hose reel systems
- equipment that may be for residential, commercial

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	and industrial projects and for a new or an existing structure being renovated, extended, restored or maintained.
Design requirements may include:	• architectural specifications • builder specifications • owner requirements • specialist water use applications • relevant statutory authorities.
Cost-benefit analysis may include:	• comparison of range of suitable materials and system choices available to enable cost-effective choices to be made without compromising project • life cycle cost-benefit analysis.
Statutory and regulatory requirements may include:	• Acts and regulations • local and state government policies.
Australian and New Zealand standards may include:	• AS/NZS3500 National plumbing and drainage: Part 1 • AS2419 Fire hydrant installations – system design, installation and commission • AS2441 Installation of fire hose reels • AS/NZS2118 Automatic fire sprinkler systems – general requirements • NCC.
Manufacturer requirements may include:	• material specifications and standards • pump tables • sizing tables • technical and trade manuals.

Desktop study may include:	• collection and interpretation of existing data for design purposes from:
	  • architectural and building plans
	  • council requirements
	  • developer requirements
	  • regulatory requirements
	  • environmental, social and economic

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	considerations • other documents and reports as appropriate.
Flow and pressure tests may include:	• results of flow and pressure tests • on-site measurement of flow (l/s), velocity (m/s) and pressure (kPa).
Performance requirements may include:	• flow, velocity, pressure and discharge requirements, established using Australian and New Zealand standards and local statutory authority's plans.
Layout of pipework may include:	• dual feed • ring main • single pipe.

Fittings and valves may include:	• fittings:
	  • mechanical fittings
	  • bends
	  • elbows
	  • tees
	  • unions
	• valves:
	  • backflow prevention
	  • pressure relief
	  • isolating
	  • pressure limiting
	  • pressure reduction.

Materials may include:	• copper • galvanised steel • fittings and fixtures • other approved materials.
Jointing methods may include:	• flanged • mechanical joints • silver braze • threaded • welded

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	• other approved methods of jointing.
Installation requirements may include:	• corrosion and elements protection • installation details • jointing requirements • supports • workmanship and quality control.
Booster and standpipe assemblies may include:	• cabinet and block plans • non-return and isolating valves • fire appliance (hard stand) access • pressure gauges • suction and delivery outlets • testing points • signage.
Hose reel assemblies may include:	• Australian standards' requirements for clearances and requirements • non-return and backflow prevention valves • pipe sizes.
Design elements of ***thrust blocks*** may include:	• designed and installed to AS/NZS3500 • design details for tees, elbows and valves • keying and anchorage points • sizes • soil characteristics • velocity and flow forces to be resisted.
Pipe fixings may include:	• bedding and thrust blocks • corrosion protection • covers • masonry fixing • material requirements • pipe supports spacings and locations • vertical support fixing.
Pump, pump controls and pumproom requirements may	• electrical supply requirements • heating

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include:

- inlet and outlet design requirements
- installation and mounting requirements
- manual and automatic controls
- pump selection
- space requirements
- valve requirements
- ventilation requirements.

Water storage systems may include:

- inlet valve design and sizing
- outlet valve design and sizing
- overflow requirements
- safe tray requirements
- tank sizes
- vortex plates.

Delivery systems may include:

- gravity feed
- mains pressure
- pump supply.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - selecting appropriate material to ensure minimal environmental impact
  - efficient use of material
  - efficient energy usage
  - efficient use and recycling of material
  - disposing of waste material to ensure minimal environmental impact
  - efficient water usage, harvesting and/or disposal
  - life cycle cost-benefit analysis
  - consideration of the Green Building Council of Australia rating scheme.

Plans may include:

- axonometrics
- cross-sections
- details
- elevations
- isometrics

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- schematics, which may be produced using:
  - computer generation
  - drawing equipment
- sections
- submission for client approval
- pipework fabrication sheets and stores lists
- service coordination.

Specification may include:

- support and specialised components
- jointing
- manufacturer
- materials
- valve selection
- workmanship and quality control.

Testing may include:

- air pressure test
- flow
- hydrostatic test.

Commissioning schedule may include:

- checking and flushing the system
- inspecting for defects
- flow testing
- checking system operation.

Operation and maintenance manual may include:

- as installed drawings
- certificate reference
- hydraulic calculations and water supply details
- manufacturer data
- relevant standards of maintenance of all maintainable equipment
- system description and operating instructions.

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Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPGS3046A Install LPG systems in caravans, mobile homes and mobile workplaces

Modification History

Prerequisite unit updated
Changes throughout unit, including unit title and critical aspects
Not equivalent to CPCPGS3016A

Unit Descriptor

This unit of competency specifies the outcomes required to determine the requirements for installing and commissioning liquefied petroleum gas (LPG) systems with an operating pressure not exceeding 2.75kPa in caravans, mobile homes and mobile workplaces.

Application of the Unit

Site location for work application may be a purpose-built workshop or customer's premises.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Identify LPG system requirements.	1.1	Plans, specifications and any special instructions are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with installing and commissioning LPG systems in caravans, mobile homes and mobile workplaces are adhered to throughout the work.
		1.3	***Quality assurance requirements*** for company operations are identified and adhered to.
		1.4	Gas load and design requirements are determined from plans, specifications, and job drawing or workplace instructions.
		1.5	System capacity is calculated to ensure adequacy for the required load and compliance with relevant Australian standards and installation requirements.
		1.6	Appropriate regulator and piping are identified in terms of size, connection sizes and capacity, according to relevant Australian standards and installation requirements.
		1.7	Location of cylinders, appliances and piping set out is identified according to job requirements and in compliance with relevant Australian standards and installation requirements.
		1.8	Quantity of piping, components and fittings is estimated in compliance with relevant Australian standards and installation requirements.

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2	Prepare for installation.	2.1	***Materials***, equipment, appliances and cylinders are ordered and checked for compliance with docket and order form, and for acceptable condition.
		2.2	Appropriate ***tools and equipment*** for installing and commissioning ***LPG systems*** in caravans, mobile homes and mobile workplaces, including personal protective equipment, are identified and selected.
		2.3	Work is planned in conjunction with others involved in or affected by the work.
		2.4	Work area and materials are prepared to support efficient installation of the system.
		2.5	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
3	Install LPG system, including flue and ventilation.	3.1	Cylinders, regulators, associated pipework, appliances and fixings are installed in compliance with manufacturer requirements, relevant Australian standards and installation requirements.
		3.2	Ventilation requirements are determined and installed according to relevant Australian standards.
4	Test and commission LPG system.	4.1	Appropriate test equipment is selected.
		4.2	System is tested according to relevant Australian standards and manufacturer requirements.
		4.3	System is commissioned according to relevant Australian standards and manufacturer requirements.
		4.4	Test data is recorded in format required by regulatory and installation requirements.
		4.5	Compliance plates and signage are located and fitted according to ***statutory and regulatory authorities'*** requirements, relevant Australian standards and installation requirements.

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5	Clean up.	5.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		5.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		5.3	***Information*** is accessed and documentation completed according to statutory requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - inform relevant authorities and supervisors of completion of job
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - record data in writing
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and set out work
  - plan work with others
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to determine requirements, and install and commission LPG systems
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- electrical safety and requisite precautions
- how to access relevant information, including codes and technical standards
- job safety analysis (JSA) and safe work method statements (SWMS)
- process for determining material requirements
- procedures for installing and commissioning gas systems in caravans, mobile homes and

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mobile workplaces

- properties of gas, gas safety, combustion principles, gas pressures, and cylinder installation and ventilation requirements
- relevant statutory requirements related to installing LPG systems
- SI system of measurements
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to determine requirements, and install and commission LPG systems in caravans, mobile homes and mobile workplaces
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications for a project, determining the requirements for, installing, testing and commissioning LPG systems in either a caravan, mobile home or mobile workplace by determining the gas load, storage capacity and ventilation requirements for two gas appliances, ensuring:
  - application of sustainability principles and concepts throughout the installation process
  - correct identification of location, design and details of proposed installation
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or

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Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Integrated Framework Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

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- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - confined spaces
  - electricity
  - hazardous materials and substances
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of tools and equipment
  - work site visitors and the public
  - working at heights
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements

- clean-up protection

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may include:

- waste management.

Quality assurance requirements may include:

- Australian standards
- environment policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Materials:

- may include:
  - copper tubing
  - fittings
  - fixing materials
  - flue systems
  - gas cylinders
  - gas-operated appliances
  - gas hose assemblies
  - gas regulators
  - other approved materials
- are to comply with job specifications and appropriate standards for gas installations.

Tools and equipment may include:

- files
- flaring tools
- hacksaws
- hand trolleys
- hoists and jacks
- lifting and load shifting equipment
- measuring equipment
- power cutting tools
- pressure testing equipment
- silver brazing equipment
- spanners
- wrenches.

LPG system **may include:**

- approved appliances
- cylinders
- flue systems
- piping
- regulators.

Sustainability principles and concepts:

- cover the social, economic and environmental use of resources to meet current and future needs
- may include:

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- selecting appropriate materials
- efficient use and recycling of material
- using energy efficient appliances
- disposing of waste material appropriately.

Statutory and regulatory authorities may include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Information may include:

- charts and hand drawings
- plans and sketches
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- recognised formulas or tables accepted by the regulatory authority
- regulatory and legislative requirements, particularly those pertaining to:
  - WHS and environmental requirements
  - plumbing and/or gasfitting authority regulations
- relevant Australian standards
- safe work procedures relating to determining requirements, and installing and commissioning LPG systems in caravans, mobile homes and mobile workplaces
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

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Unit Sector(s)

Competency field Gas services

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPGS3047A Install LPG systems in marine craft

Modification History

Version	Comments
1	This version first released with CPC08 Construction, Plumbing and Services Training Package Version 8.

Unit Descriptor

This unit of competency specifies the outcomes required to determine the requirements for, and install and commission, gas detection systems and liquefied petroleum gas (LPG) systems with an operating pressure not exceeding 2.75kPa in marine craft.

Application of the Unit

Site location for work application may be a purpose-built workshop or customer's premises.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043 Carry out WHS requirements
A

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Identify LPG system requirements.	1.1	Plans, specifications and any special instructions are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with installing and commissioning LPG and gas detection systems in marine craft are adhered to throughout the work.
		1.3	***Quality assurance requirements*** for company operations are identified and adhered to.
		1.4	Gas load and design requirements are determined from plans, specifications, and job drawings or workplace instructions.
		1.5	System capacity is calculated to ensure adequacy for the required load and compliance with relevant Australian standards and installation requirements.
		1.6	Appropriate regulator and piping are identified in terms of size, connection sizes and capacity, according to relevant Australian standards and installation requirements.
		1.7	Location of cylinders, appliances and piping set out is identified according to job requirements and in compliance with relevant Australian standards and installation requirements.
		1.8	Quantity of piping, components and fittings is estimated in compliance with relevant Australian standards and installation requirements.

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2	Prepare for installation.	2.1	***Materials***, equipment, appliances and cylinders are ordered and checked for compliance with docket and order form, and for acceptable condition.
		2.2	Appropriate ***tools and equipment*** for installing and commissioning ***LPG systems*** and ***gas detection*** in marine craft, including personal protective equipment, are identified and selected.
		2.3	Work is planned in conjunction with others involved in or affected by the work.
		2.4	Work area and materials are prepared to support efficient installation of the system.
		2.5	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process**.**
3	Determine and install LPG systems.	3.1	Cylinders, regulators, associated pipework, appliances and fixings are installed in compliance with manufacturer requirements, relevant Australian standards and installation requirements.
		3.2	Gas detection system requirements are determined and installed according to relevant Australian standards and manufacturer requirements.
		3.3	Low voltage wiring is installed according to manufacturer instructions.
		3.4	Ventilation requirements are determined and installed according to relevant Australian standards.
4	Test and commission LPG and detection systems.	4.1	Appropriate test equipment is selected.
		4.2	Systems are tested and commissioned according to relevant Australian standards and manufacturer requirements.
		4.3	Test data is recorded in format required by regulatory and installation requirements.
		4.4	Compliance plates and signage are located and fitted according to ***statutory and regulatory authorities'*** requirements, relevant Australian standards and

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			installation requirements.
5	Clean up.	5.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		5.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		5.3	***Information*** is accessed and documentation completed according to ***statutory*** requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - inform relevant authorities and supervisors of completion of job
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - record data in writing
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and set out work
  - plan work with others
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
  - confirm that the gas detection system complies with Australian standards
  - determine requirements, and install and commission LPG systems
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

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- requirements and procedures relating to electrical safety and requisite precautions
- procedures for accessing relevant information, including codes and technical standards
- job safety analysis (JSA) and safe work method statements (SWMS)
- process for determining material requirements
- procedures for installing and commissioning gas systems in marine craft
- properties of gas, gas safety, combustion principles, gas pressures, cylinder installation, ventilation and gas detection requirements
- relevant statutory requirements relating to installing LPG systems in marine craft
- SI system of measurements
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to determine requirements, and install and commission LPG systems in marine craft
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications for a project, determining the requirements for, installing, testing and commissioning LPG and gas-detection systems in a marine craft by determining the gas load, storage capacity and ventilation requirements for a gas appliance, ensuring:
  - application of sustainability principles and concepts when installing the LPG systems
  - correct identification of location, design and details of proposed installation
  - correct selection and use of appropriate processes, tools and equipment
  - completion of all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement

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- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Integrated Framework Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of

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the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - confined spaces
  - electricity
  - hazardous materials and substances
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of tools and equipment
  - work site visitors and the public
  - working at heights
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements may include:

- clean-up protection
- waste management.

Quality assurance requirements may include:

- Australian standards
- environment policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy

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- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Materials:

- may include:
  - copper tubing
  - fittings
  - fixing materials
  - flue systems
  - gas cylinders
  - gas detection system
  - gas-operated appliances
  - gas regulators
  - gas hose assemblies
  - other approved materials
- are to comply with job specifications and appropriate standards for gas installations.

Tools and equipment may include:

- files
- flaring tools
- hacksaws
- hand trolleys
- hoists and jacks
- lifting and load shifting equipment
- measuring equipment
- power cutting tools
- pressure testing equipment
- silver brazing equipment
- spanners
- wrenches.

LPG system may include:

- approved appliances
- cylinders
- flue systems
- piping
- regulators
- ventilation.

***Gas detection system* must include:**

- gas detection unit
- low voltage wiring (to a limit of 32 volts)
- sensors
- solenoid valve
- power supply.

Sustainability principles

- cover the social, economic and environmental use of resources to meet current and future needs

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and concepts:

- may include:
  - selecting appropriate materials
  - efficient use and recycling of material
  - using energy efficient appliances
  - disposing of waste material appropriately.

Statutory and regulatory authorities may include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Information may include:

- charts and hand drawings
- plans and sketches
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- recognised formulas or tables accepted by the regulatory authority
- regulatory and legislative requirements, particularly those pertaining to:
  - WHS and environmental requirements
  - plumbing and/or gasfitting authority regulations
- relevant Australian standards
- safe work procedures relating to determining requirements, and installing and commissioning LPG and gas detection systems in marine craft
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Competency field	Gas services
Unit sector	Plumbing and services

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Custom Content Section

Not applicable.

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CPCPGS3048A Install gas pressure control equipment

Modification History

Prerequisite unit updated
Minor changes throughout the unit
Not equivalent to CPCPGS3018A

Unit Descriptor

This unit of competency specifies the outcomes required to install and commission gas control and regulating equipment for consumer gas piping carrying natural gas (NG), liquefied petroleum gas (LPG), or tempered liquefied petroleum gas (TLPG) up to 200kPa.
This unit requires the determination of the requirements for gas control and regulating equipment (for pressures up to 200kPa), and its installation, testing and commissioning according to standards.
The design requirements of this unit are limited to the application of the design to layout and installation.

Application of the Unit

Site location for work application may be a customer's premises.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Identify requirements for gas pressure control equipment.	1.1	Plans, specifications and any special instructions are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with installing gas pressure control and regulating equipment are adhered to throughout the work.
		1.3	***Quality assurance requirements*** for company operations are identified and adhered to.
		1.4	Gas load and design requirements are determined from design drawing or workplace instructions.
		1.5	Available gas pressure is measured and suitability of supply determined.
		1.6	Calculations are recorded in format required by job specification or workplace requirements.
		1.7	Selected gas pressure controls and regulator, specified locations and venting requirements are checked for compliance against standards and workplace requirements.
		1.8	Quantity and type of materials are estimated from design drawing or on-site dimensions.
		1.9	***Materials***, pipe fittings and components are selected to comply with standards and regulatory authorities'

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			requirements.
2	Prepare for installation.	2.1	Materials, equipment and cylinders are ordered and checked for compliance with docket and order form, and for acceptable condition.
		2.2	Appropriate ***tools and equipment*** for the installation, including personal protective equipment, are identified and selected.
		2.3	Work is planned in conjunction with others involved in or affected by the work.
		2.4	Work area and materials are prepared to support efficient installation of equipment.
3	Install and commission control and regulating equipment.	3.1	***Gas control and regulating equipment*** is installed in compliance with standards and ***statutory and regulatory authorities'*** requirements.
		3.2	Appropriate test apparatus is selected for commissioning the control and regulating equipment.
		3.3	Commissioning is carried out according to standards, and authorities' and manufacturer requirements, and the commissioning data is recorded in format required by the authority or job specification.
		3.4	Pressure is correctly adjusted to comply with standards and job specification.
		3.5	***Sustainability principles and concepts*** are applied throughout the installation process.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice, and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	***Information*** is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - inform relevant authorities and supervisors of completion of job
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - record data in writing
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and set out work
  - plan work with others
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
  - determine requirements for gas control and regulating equipment (for pressures up to 200kPa)
  - install, test and commission gas control and regulating equipment according to standards
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

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Required knowledge

- electrical safety and requisite precautions
- gas pressure control equipment
- how to access relevant information, including codes and technical standards
- job safety analysis (JSA) and safe work method statements (SWMS)
- procedures for installing and testing gas pressure control and regulating equipment
- properties of gas, gas safety, combustion principles, pressure and flow rates
- relevant statutory requirements related to installing and commissioning gas control and regulating equipment
- SI system of measurements
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to determine requirements, and install and commission gas pressure control equipment
- applying safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- given the plans and specifications for the installation of gas pressure control and regulating equipment, determining the requirements, and installing, testing and commissioning a single and a two-stage gas regulator, ensuring:
  - it operates to appropriate reduced pressure
  - application of sustainability principles and concepts throughout
  - correctly identifying requirements, and installing and commissioning pressure control and regulating equipment
  - correctly selecting and using appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and

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environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace

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- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - hazardous materials and substances
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of tools and equipment
  - work site visitors and the public

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- working at heights
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements include:

- clean-up protection
- waste management.

Quality assurance requirements may include:

- Australian standards
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Materials for installing gas pressure control and regulating equipment:

- may include:
  - copper tubing
  - fitting and fixing materials
  - gas cylinders
  - gas pressure regulators
  - non-metallic hose assemblies
  - stainless steel
  - other approved materials
- are to comply with job specifications and appropriate standards for gas installations.

Tools and equipment may include:

- chain blocks
- flaring tools
- forklifts
- grinders
- hacksaws
- hand trolleys
- hoists and jacks
- ladders
- load and lifting equipment
- measuring equipment
- rollers

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- scaffolding
- silver brazing equipment
- spanners
- testing equipment
- wrenches.

Gas control and regulating equipment is to include:

- over-pressure regulators, including internal relief and over-pressure shut off (OPSO) valve.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - selecting appropriate components to ensure minimal environmental impact
  - efficient energy use
  - efficient use and recycling of material
  - correct handling of hazardous materials
  - disposing of waste material to ensure minimal environmental impact.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing and gasfitting authority regulations
- relevant Australian standards
- safe work procedures relating to installing and

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testing gas pressure control and regulating equipment
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPGS3049A Install Type A gas appliance flues

Modification History

Prerequisite unit updated
Minor changes throughout the unit
Not equivalent to CPCPGS3018A

Unit Descriptor

This unit of competency specifies the outcomes required to install and test flues for Type A gas appliances.

Application of the Unit

Site location for work application may be either domestic or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Design drawings, specifications and data are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with installing Type A gas appliance flues are adhered to throughout the work.
		1.3	***Quality assurance requirements*** for company operations are identified and adhered to.
		1.4	Appropriate work notices and required documentation are completed and dispatched according to ***statutory and regulatory authorities'*** requirements.
		1.5	Tasks are planned in conjunction with others involved in or affected by the work.
		1.6	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
		1.7	Work area is prepared to support efficient installation of ***Type A gas flues***.
2	Identify flue requirements.	2.1	Proposed flue location, installation requirements and route are determined.
		2.2	Dimensions and load are determined from design drawing or instruction and manufacturer instructions.
		2.3	Size of flue, flue material and components are determined according to relevant Australian standards, regulatory authorities' requirements and manufacturer instructions.
		2.4	Ventilation requirements are calculated in compliance

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			with relevant Australian standards and are determined as appropriate for job specifications.
		2.5	Quantity and type of ***materials*** required are estimated from design drawing or on-site inspection and ordered according to workplace requirements.
3	Install and test flue.	3.1	Flue is installed in compliance with relevant Australian standards and job specifications.
		3.2	***Sustainability principles and concepts*** are applied throughout the installation.
		3.3	Flue is weather-proofed according to manufacturer specifications and site requirements.
		3.4	Flue is tested for operation and adjusted as required according to manufacturer specifications.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	***Information*** is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - inform relevant authorities and supervisors of completion of job
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - record data in writing
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and set out work
  - plan work with others
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to install and test flues for Type A gas appliances
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- electrical safety and requisite precautions
- energy efficiency of appliances
- how to access relevant information, including codes and technical standards

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- job safety analysis (JSA) and safe work method statements (SWMS)
- material requirements determination process
- procedures for installing and testing flues for Type A gas appliances, including flashing of penetrations
- properties of gas, gas safety, combustion principles, pressure and flow rates
- relevant statutory requirements related to installing and testing Type A gas appliance flues
- SI system of measurements
- workplace and equipment safety requirements

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, relevant Australian standards and specifications to determine requirements for installing and testing Type A gas appliance flues
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, installing and testing a fan-assisted flue and a natural draught flue, ensuring:
  - application of sustainability principles and concepts throughout the installation
  - correct identification of location, design and details of proposed installations
  - correct selection and use of appropriate

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processes, tools and equipment
- completion of all work to specification
- compliance with regulations, relevant Australian standards and organisational quality procedures and processes
- communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and

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correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and

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regulations and may include:	workplace policies and practices
	• safe operating procedures, including recognising and preventing hazards associated with:
	  • electricity
	  • hazardous materials and substances
	  • service lines
	  • surrounding structures and facilities
	  • trip hazards
	  • use of tools and equipment
	  • work site visitors and the public
	  • working at heights
	  • working in proximity to others
	• use of firefighting equipment
	• use of first aid equipment
	• workplace environment and safety.

Environmental requirements may include:	• clean-up protection • waste management.
Quality assurance requirements may include:	• Australian standards • environment policy • Environment Protection Authority (EPA) • internal company quality assurance policy and risk management strategy • International Standards Organisation • site safety plan • workplace operations and procedures.
Statutory and regulatory authorities include:	• commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.
Tools and equipment may include:	• chain blocks • drills • flaring tools • forklifts • grinders • hacksaws • hand and power tools

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- hand trolleys
- hoists and jacks
- ladders
- lifting and load shifting equipment
- limited height scaffolding
- measuring equipment
- rollers
- spanners
- testing equipment and instruments
- tin snips
- wrenches.

Type A gas flues:

- may include:
  - balanced
  - individual appliance
  - multiple flues
  - natural draught
  - other approved fluing methods
- may be required by:
  - decorative heaters
  - ducted heating systems
  - heated water storage
  - instant heated water heaters
  - space heaters
  - wall ovens.

Materials include Type A gas appliance flue components and materials that:

- include:
  - flashing materials, including lead and sheet metal or other approved materials
  - stainless steel and fibre cement
  - twin wall flues
- may include proprietary flashings
- are to comply with appropriate Australian standards for installing and testing Type A gas appliance flues.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient energy use

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- efficient use and recycling of material
- correct handling of hazardous materials
- disposing of waste material to ensure minimal environmental impact
- selecting appropriate components to ensure minimal environmental impact.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- recognised formulas or tables accepted by the regulatory authority
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing and gasfitting authority regulations
- relevant Australian standards
- safe work procedures relating to installing and testing Type A gas appliance flues
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

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Custom Content Section

Not applicable.

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CPCPGS3050A Install Type B gas appliance flues

Modification History

Prerequisite unit changed
Minor changes throughout the unit
Not equivalent to CPCPGS3020A

Unit Descriptor

This unit of competency specifies the outcomes required to install flue systems for Type B gas appliances.
Work may also involve the installation of power flue applications.
The design requirements of this unit are limited to the application of the design to layout and installation.

Application of the Unit

Site location for work application may be a customer's premises.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Work plans, specifications and any special instructions are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with installing flues for Type B gas appliances are adhered to throughout the work.
		1.3	***Quality assurance requirements*** for company operations are identified and adhered to.
		1.4	Approval of system design is obtained according to ***statutory and regulatory authority*** and workplace requirements.
		1.5	Tasks are planned in conjunction with others involved in or affected by the work.
		1.6	Sequence of work is prioritised to suit job requirements.
		1.7	***Tools and equipment*** are selected consistent with installing a ***Type B appliance*** flue and checked for serviceability.
2	Identify flue requirements.	2.1	Details of dimensions and loads are checked for compliance with plans and specifications.
		2.2	Size of flue is calculated according to authorities' requirements and is appropriate for type of appliance

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			burner.
		2.3	Flue is selected for type of appliance and its determined route, in compliance with relevant Australian standards.
		2.4	Quantity and type of ***materials*** for the installation are calculated from plans and specifications.
3	Install flue.	3.1	Preparatory work, including any penetration of walls and rooves, is performed according to industry and workplace requirements.
		3.2	Installation is completed without damage or distortion to surrounding environment or other services.
		3.3	Flue is installed in compliance with relevant Australian standards and authorities' requirements.
		3.4	***Sustainability principles and concepts*** are applied throughout the installation.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	***Information*** is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - inform relevant authorities and supervisors of completion of job
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - record data in writing
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and set out work
  - plan work with others
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to install flues for Type B gas appliances
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- electrical safety and requisite precautions
- how to access relevant information, including codes and technical standards
- job safety analysis (JSA) and safe work method statements (SWMS)

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- material requirements determination process
- procedures for installing Type B appliances, including roof and wall penetration and flashing
- properties of gas, gas safety, combustion principles, pressure and flow rates
- relevant statutory requirements related to installing flues for Type B appliances
- SI system of measurements
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, Australian standards and specifications for the installation of Type B appliance flues
- applying safety requirements throughout the work sequence, including the electrical safety requirements and use of personal protective clothing and equipment
- given the plans, specifications and regulatory authority approval, installing a mild steel flue from a boiler flue spigot to terminate above the roofline, ensuring:
  - application of sustainability principles and concepts throughout the installation
  - correct identification of location, design and details of proposed installation
  - correct selection and use of appropriate processes, tools and equipment
  - completion of all work to specification
  - compliance with regulations, relevant Australian standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will

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usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a

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number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of tools and equipment
  - work site visitors and the public
  - working at heights

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- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements may include:

- clean-up protection
- waste management.

Quality assurance requirements may include:

- Australian standards
- environment policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- chain blocks
- forklifts
- grinders and ladders
- hacksaws
- hand and power tools
- hand trolleys
- hoists
- jacks
- lifting and load shifting equipment
- manual metal arc welding equipment
- measuring equipment
- metal inert gas (MIG) and tungsten inert gas (TIG) welding equipment
- oxy welding cutting equipment
- restricted height scaffolding and elevated work platform
- rollers
- tin snips.

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Type B appliances:

- are complex gas installations of greater than 10 megajoules (MJ) rating for which there is no approval scheme
- flue materials and installation of Type B appliance flues are to conform to relevant Australian standards.

Type B flue ***materials***:

- may include:
  - fibre cement
  - mild steel
  - stainless steel
  - other approved materials
- are to comply with the relevant Australian standards for Type B gas appliance flues.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - selecting appropriate components and material
  - efficient energy use
  - efficient use and recycling of material
  - correct handling of hazardous materials
  - disposing of waste material to ensure minimal environmental impact.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing and gasfitting authority regulations
- recognised formulas or tables accepted by the

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regulatory authority
- relevant Australian standards
- safe work procedures relating to installing Type B appliance flues
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPGS3051A Purge consumer piping

Modification History

Prerequisite unit updated
Changes to performance criteria, required skills, range statement and critical aspects
Not equivalent to CPCPGS3021A

Unit Descriptor

This unit of competency specifies the outcomes required to purge consumer gas piping systems.

Application of the Unit

Site location for work application may be either domestic or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for purging.	1.1	Design drawing and specification are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with purging consumer gas piping systems are adhered to throughout the work.
		1.3	***Quality assurance requirements*** for company operations are identified and adhered to.
		1.4	Work is planned in conjunction with others involved in or affected by the work.
		1.5	Appropriate ***tools and equipment*** for the conduct of ***purging***, including personal protective equipment, are identified, selected and checked for serviceability.
		1.6	Work area and ***materials*** are prepared to support efficient purging of consumer gas piping system.
2	Identify purge requirements.	2.1	Installation is checked to ensure compliance with standards and relevant specifications.
		2.2	Volume of piping system is determined from design drawing and standards, and calculations are recorded in format required by job specification.
		2.3	Method of purging is selected in compliance with standards and authorities' requirements.

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		2.4	Purge medium is selected in compliance with standards, and calculations of the purge medium volume are recorded in format required by job specification.
3	Carry out and test purge operation.	3.1	Outlet point for purge gas is located and purge site is checked for ignition sources.
		3.2	Purge is carried out according to standards or ***statutory and regulatory authorities'*** requirements and ***sustainability principles and concepts***.
		3.3	Completion of purge is verified by test equipment, or by recognised and approved workplace testing procedures.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice, and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	***Information*** is accessed and documentation completed according to installation requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - inform relevant authorities and supervisors of completion of job
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - record data in writing
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and set out work
  - plan work with others
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
  - determine purging requirements of a consumer gas piping system in terms of volume, method and medium of purge
  - conduct purging and testing for its completeness
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

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- characteristics of materials used in the purging process
- effect of heat on the materials used during the purging and testing process
- electrical safety and requisite precautions
- how to access relevant information, including codes and technical standards
- job safety analysis (JSA) and safe work method statements (SWMS)
- procedures for purging gas piping systems, including isolation processes and procedures
- properties of gas, gas safety, combustion principles, ignition principles, pressure and flow rates
- relevant statutory requirements related to purging gas piping systems
- SI system of measurements
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications for determining requirements, and purging and testing consumer gas piping systems
- applying safety requirements throughout the work sequence, including applying equipotential bonding procedures and using personal protective clothing and equipment; and eliminating possible ignition sources
- given the plans and specifications, purging, testing and recording the purge operations (one to be a fuel to inert purge and the other to be an inert to fuel purge) for a consumer gas piping system of greater than 0.03 cubic metres, which includes a subsidiary meter, ensuring:
  - application of sustainability principles and concepts
  - correct identification of method, medium, calculations and procedures to purge the piping system
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources

This competency is to be assessed using standard and

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for assessment

authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and

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the practical requirements of the workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - hazardous materials and substances
  - electricity
  - service lines
  - surrounding structures and facilities
  - trip hazards

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- use of tools and equipment
  - work site visitors and the public
  - working at heights
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements may include:

- clean-up protection
- waste management.

Quality assurance requirements may include:

- Australian standards
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:

- barriers
- buckets
- gas detector
- hand and power tools
- ladders
- purge stacks
- restricted height scaffolding
- signs
- testing equipment.

Purging:

- may occur before commencing work and on completion of work using either air, fuel gas or an inert gas on pipe volumes up to and exceeding 0.03 cubic metres, to applicable regulatory requirements
- installation to be purged, calculations, method, medium and conduct of purging is to conform to standards or requirements of local regulatory authority
- methods of purging are to include:
  - fuel to inert purge
  - inert to fuel purge.

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Materials for purging may include:

- compressed air
- nitrogen
- carbon dioxide
- fuel gas.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - appropriate purging medium that has minimal environmental impact
  - efficient use of purge medium.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing and/or gasfitting authority regulations
- recognised formulas or tables accepted by the regulatory authority
- relevant Australian standards
- safe work procedures relating to purging and testing consumer gas piping systems
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

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Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPGS3052A Maintain Type A gas appliances

Modification History

Prerequisite unit updated
Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPGS3022A

Unit Descriptor

This unit of competency specifies the outcomes required to perform basic maintenance on Type A gas appliances.

Application of the Unit

Site location for work application may be either domestic or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Appliance specifications and servicing and manufacturer manuals are obtained for planned work activity.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with maintenance of ***Type A gas appliances*** are adhered to throughout the work.
		1.3	***Quality assurance requirements*** for company operations are identified and adhered to.
		1.4	***Tools and equipment*** are selected consistent with ***maintaining Type A gas appliances***, checked for serviceability, and any faults are reported to supervisor.
		1.5	Tasks are planned in conjunction with others involved in or affected by the work.
		1.6	Work area is prepared and ***materials*** identified to support the efficient conduct of maintenance of Type A gas appliances.
2	Identify maintenance requirements.	2.1	Appliance is checked to ensure installation complies with standards and manufacturer requirements.
		2.2	Electrical safety check is carried out according to authorities' procedures and data is recorded in format required by job specification.

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		2.3	Test equipment is used to support visual inspection and to conduct testing according to ***statutory and regulatory authorities'*** requirements.
		2.4	***Sustainability principles and concepts*** are applied throughout the purging process.
3	Conduct maintenance.	3.1	Maintenance tasks are carried out according to specifications and manufacturer requirements.
		3.2	Appliances are checked for operation according to specifications, standards and manufacturer recommendations.
		3.3	Faults and malfunctions are identified and reported according to workplace requirements.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice, and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	***Information*** is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - inform relevant authorities and supervisors of completion of job
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - record data in writing
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and set out work
  - plan work with others
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology
- undertaking routine basic maintenance on Type A gas appliances, including gas, mechanical and appliance construction components

Required knowledge

- documentation and reporting requirements
- electrical safety and requisite precautions

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- how to access relevant information, including codes and technical standards
- job safety analysis (JSA) and safe work method statements (SWMS)
- procedures for maintaining and testing Type A gas appliances
- properties of gas, gas safety, combustion principles, pressure and flow rates
- relevant statutory requirements related to maintaining Type A gas appliances
- SI system of measurements
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to determine requirements and maintain Type A gas appliances
- applying safety requirements throughout the work sequence, including applying equipotential bonding procedures and using personal protective clothing and equipment
- given the plans and specifications, performing cleaning and routine basic adjustment to two Type A appliances, checking gas supply pressures, effective operation and flue condition, ensuring:
  - application of sustainability principles and concepts
  - correct identification of maintenance procedures and requirements
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will

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usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a

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number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of tools and equipment
  - work site visitors and the public
  - working at heights

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- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements include:

- clean-up protection
- waste management.

Type A gas appliances:

- are badged appliances of less than 500 megajoules (MJ) for which an Australian Gas Association (AGA) approval scheme exists
- include:
  - decorative heaters
  - ducted heating systems
  - gas stoves and hot plates
  - heated water storage
  - instant heated water heaters
  - space heaters.

Quality assurance requirements may include:

- Australian standards
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:

- chain blocks
- forklifts
- hand and power tools
- hand trolleys
- hoists and jacks
- lifting and load shifting equipment
- measuring equipment
- rollers
- spanners
- test equipment and instruments, including:
  - manometers
  - multi-meters

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- neon testers
- volt sticks
- wrenches.

Maintenance of Type A gas appliances:

- includes cleaning or adjusting gas components, including:
  - burners
  - pilots
  - regulators
  - thermocouples
  - thermostats
  - temperature and pressure relief (TPR) valves
- also includes rectifying simple gas supply problems, including meters and regulators
- is to comply with appropriate Australian standards.

Materials for the maintenance of Type A gas appliances:

- may include:
  - piping materials
  - regulators and meters
  - Type A gas appliances
  - other approved materials
- are to comply with appropriate standards for maintaining Type A gas appliances.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include appropriate purging medium that has minimal environmental impact.

Information may include:

- charts and hand drawings
- diagrams, sketches or graphics
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions

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- maps
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing and gasfitting authority regulations
- relevant Australian standards
- safe work procedures relating to maintaining Type A gas appliances
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPGS3053A Disconnect and reconnect Type A gas appliances

Modification History

Prerequisite unit changed
Minor changes throughout the unit
Not equivalent to CPCPGS3023A

Unit Descriptor

This unit of competency specifies the outcomes required to disconnect and reconnect services from Type A gas appliances operating on natural gas (NG), or liquefied petroleum gas (LPG), or tempered liquefied petroleum gas (TLPG) up to 200kPa.
The work is confined to disconnecting and reconnecting a like appliance.

Application of the Unit

Site location for work application may be either domestic or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Appliance and equipment specifications and appropriate manufacturer manuals are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with disconnecting and reconnecting ***Type A gas appliances*** are adhered to throughout the work.
		1.3	***Quality assurance requirements*** for company operations are identified and adhered to.
		1.4	***Tools, equipment*** and ***materials*** are selected consistent with disconnecting and reconnecting services, are checked for serviceability, and faults are reported.
		1.5	Appropriate test equipment is selected for the job.
		1.6	Tasks are planned in conjunction with others involved in or affected by the work.
2	Identify appliance requirements.	2.1	Appropriate appliance for gas supply type is selected according to job specification.
		2.2	Appliance installation is checked to ensure its compliance with relevant Australian standards.
		2.3	Appliance is checked for safe operation and its performance is checked against specification.

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		2.4	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
3	Disconnect and reconnect equipment.	3.1	Electrical safety check is carried out according to state or territory authorities' procedures and ***statutory and regulatory authorities'*** requirements.
		3.2	Safety-check data is recorded in format required by job specification.
		3.3	Appliance is isolated from gas service according to statutory and regulatory requirements.
		3.4	Work is carried out according to job instruction without damage to surrounding equipment or structures.
4	Test operation of equipment.	4.1	Mechanical services, gas, water and other service connections are checked for leaks.
		4.2	Appliance is operated to ensure it conforms to appliance specification.
		4.3	Mechanical services equipment is adjusted according to specification.
5	Clean up.	5.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		5.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		5.3	***Information*** is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - inform relevant authorities and supervisors of completion of job
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - record data in writing
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and set out work
  - plan work with others
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to disconnect and reconnect Type A gas appliances from mechanical services, gas, water, air and other services to allow replacement, repair or maintenance
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- electrical safety and requisite precautions
- how to access relevant information, including codes and technical standards
- ignition and combustion principles relating to conveyed materials or materials used in

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confined work spaces
- job safety analysis (JSA) and safe work method statements(SWMS)
- procedures for disconnecting and reconnecting Type A gas appliances
- properties of gas, gas safety, combustion principles, pressure and flow rates
- relevant statutory requirements related to disconnecting and reconnecting Type A gas appliances
- SI system of measurements
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, Australian standards and specifications for disconnecting and reconnecting Type A gas appliances
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, effectively isolating, disconnecting and reconnecting at least two Type A gas appliances, involving at least two gas types, ensuring:
  - application of sustainability principles and concepts
  - correct identification of procedure and sequence of work
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, relevant Australian standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

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Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning

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experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances
  - identifying and testing for electrical hazards
  - service lines
  - surrounding structures and facilities
  - trip hazards

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- use of tools and equipment
  - work site visitors and the public
  - working at heights
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements may include:

- clean-up protection
- waste management.

Type A gas appliances:

- are badged appliances of less than 500 megajoules (MJ) for which an approval scheme exists.

Quality assurance requirements may include:

- Australian standards
- environment policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:

- ladders
- lifting and load shifting equipment, which may also include:
  - chain blocks
  - forklifts
  - hand trolleys
  - hoists and jacks
  - rollers
- measuring equipment
- spanners
- test equipment and instruments
- wrenches.

Materials may include:

- piping materials
- Type A gas appliances.

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Sustainability principles and concepts:	• cover the current and future social, economic and environmental use of resources
	• may include:
	  • efficient energy and water use
	  • efficient use and recycling of material
	  • correct handling of hazardous materials
	  • disposing of waste material to ensure minimal environmental impact
	  • selecting appropriate components to ensure minimal environmental impact.
	•

Statutory and regulatory authorities include:	• commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Information may include:	• charts and hand drawings
	• instructions issued by authorised organisational or external personnel
	• job drawings
	• manufacturer specifications and instructions
	• material safety data sheets (MSDS)
	• memos
	• organisation work specifications and requirements
	• plans and sketches
	• regulatory and legislative requirements, particularly those pertaining to:
	  • building codes
	  • WHS and environmental requirements
	  • plumbing and gasfitting authority regulations
	• relevant Australian standards
	• safe work procedures relating to disconnecting and reconnecting Type A gas appliances
	• signage
	• verbal, written and graphical instructions
	• work bulletins
	• work schedules, plans and specifications.

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Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPGS3054A Calculate and install natural ventilation for Type A gas appliances

Modification History

Prerequisite unit updated
Changes to descriptor, performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPGS3024A

Unit Descriptor

This unit of competency specifies the outcomes required to calculate and install natural ventilation for Type A gas appliances operating on natural gas (NG), liquefied petroleum gas (LPG) or tempered liquefied petroleum gas (TLPG) not exceeding 200kPa.

Application of the Unit

Site location for work application may be either domestic or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Design drawings, specifications and any special instructions are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with calculating and installing natural ***ventilation*** for Type A gas appliances are adhered to throughout the work.
		1.3	***Quality assurance requirements*** for company operations are identified and adhered to.
		1.4	Appropriate work notices and required documentation are completed and dispatched according to authorities' requirements.
		1.5	Tasks are planned in conjunction with others involved in or affected by the work.
		1.6	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
		1.7	Work area is prepared to support efficient calculation and installation of natural ventilation for Type A gas appliances.

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2	Identify natural ventilation requirements.	2.1	Gas load and design requirements are determined from design drawings, plans, specifications and given information.
		2.2	Source and path of air supply are determined to comply with standards, plans and specifications of the job.
		2.3	Free ventilation area is calculated in required format and confirmed as being according to standards, plans and specifications.
		2.4	Ventilation openings are calculated in required format and positioned in compliance with standards.
		2.5	Quantity and type of ***materials*** and other components required are estimated from design drawing or on-site dimensions and ordered according to workplace requirements.
3	Install ventilation and test appliance.	3.1	Ventilation is installed in compliance with building codes and standards without damage to the building structure, surrounding environment or other services.
		3.2	Appliance and flues are tested and adjusted where necessary for operation and compliance with standards.
		3.3	***Sustainability principles and concepts*** are applied throughout the installation.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulation, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	***Information*** is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- calculating, installing and testing natural ventilation for Type A gas appliances
- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - inform relevant authorities and supervisors of completion of job
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - record data in writing
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and set out work
  - plan work with others
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- electrical safety and requisite precautions
- how to access relevant information, including codes and technical standards
- job safety analysis (JSA) and safe work method statements (SWMS)

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- mechanical ventilation and associated interlocks
- procedures for calculating, installing and testing natural ventilation for Type A gas appliances
- properties of gas, gas safety, combustion principles, pressure and flow rates
- relevant statutory requirements related to natural ventilation requirements for Type A gas appliances
- SI system of measurements
- workplace and equipment safety requirements

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of:
	• locating, interpreting and applying relevant information, standards and specifications for calculating, installing and testing natural ventilation for Type A gas appliances
	• applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
	• given the plans and specifications, calculating and installing natural ventilation for a minimum of three different Type A gas appliances, ensuring:
	  • application of sustainability principles and concepts
	  • correct identification of location, design and details of proposed installations
	  • correct selection and use of appropriate

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processes, tools and equipment
- completing all work to specification
- compliance with regulations, standards and organisational quality procedures and processes
- communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning

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knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and

- handling of materials
- hazard control
- personal protective clothing and equipment

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regulations and may include:	prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including recognising and preventing hazards associated with:
	  • electricity
	  • hazardous materials and substances
	  • service lines
	  • surrounding structures and facilities
	  • trip hazards
	  • use of tools and equipment
	  • work site visitors and the public
	  • working at heights
	  • working in proximity to others
	• use of firefighting equipment
	• use of first aid equipment
	• workplace environment and safety.

Environmental requirements may include:	• clean-up protection • waste management.

Ventilation:	• may be natural or mechanical
	• may be required for:
	  • type one decorative gas log fire
	  • type two decorative gas log fire
	  • ducted heating systems
	  • gas stoves and hot plates
	  • storage water heaters
	  • continuous flow water heaters
	  • space heaters.

Quality assurance requirements may include:	• Australian standards • Environment Protection Authority (EPA) • internal company quality assurance policy and risk management strategy • International Standards Organisation • National Construction Code • site safety plan • workplace operations and procedures.

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Tools and equipment may include:

- grinders
- hand and power tools
- ladders
- measuring equipment
- restricted height scaffolding
- test equipment and instruments.

Materials:

- are to comply with appropriate standards for installing ventilation for Type A gas appliances
- include Type A gas appliances and ventilation materials, including grills
- may include louvres and ducting.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - selecting appropriate material to ensure minimal environmental impact
  - efficient use of material
  - efficient energy usage
  - considering energy efficiency requirements.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing and/or gasfitting authority regulations
- recognised formulas or tables accepted by the regulatory authority
- relevant Australian standards
- safe work procedures relating to calculating and installing natural ventilation for Type A gas

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appliances
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPGS3055A Install gas sub-meters

Modification History

Prerequisite unit updated
Changes to unit title, descriptor, performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPGS3025A

Unit Descriptor

This unit of competency specifies the outcomes required to install and test gas sub-meters for gas consumer piping systems.

Application of the Unit

Site location for work application may be a customer's premises.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Identify gas piping system requirements.	1.1	Plans, specifications and any special instructions are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with ***installation*** of gas sub-meters are adhered to throughout the work.
		1.3	***Quality assurance requirements*** for company operations are identified and adhered to.
		1.4	Gas load requirements are determined from specifications or given information.
		1.5	Size of meter is determined according to standards, ***statutory and regulatory authorities'*** and installation requirements.
		1.6	Meter is located according to specifications or instructions, and complies with standards, and authorities' and installation requirements.
		1.7	Quantity and type of ***materials*** to conform to authorities' requirements and appropriate standards are estimated from specifications or on-site dimensions.

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2	Prepare for installation.	2.1	Meter and materials are ordered and checked for compliance with docket and order form, and for acceptable condition.
		2.2	Appropriate ***tools and equipment*** for installing meter, including personal protective equipment, are identified, selected and checked for serviceability.
		2.3	Appropriate testing equipment is selected.
		2.4	Work is planned in conjunction with others involved in or affected by the work.
		2.5	Work area and materials are prepared to support efficient installation of meter.
3	Install and test gas sub-meter.	3.1	Support and installation method, including any fixings, are selected to comply with manufacturer instructions, standards and installation requirements.
		3.2	Pipe section is isolated.
		3.3	Meter is installed according to plans and specifications, and complies with standards and authorities' requirements.
		3.4	Installation is purged and meter is tested according to standards and authorities' requirements.
		3.5	Leaks are located and repaired, and installation is retested.
		3.6	Test data is recorded in format required by regulating authority and installation requirements.
		3.7	***Sustainability principles and concepts*** are applied throughout the installation.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice, and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.

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4.3 ***Information*** is accessed and documentation completed according to installation requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - inform relevant authorities and supervisors of completion of job
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - record data in writing
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and set out work
  - plan work with others
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to install and test gas sub-meters for domestic residences
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- how to access relevant information, including codes and technical standards
- job safety analysis (JSA) and safe work method statements (SWMS)
- material requirements determination process

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- procedures for installing and testing gas sub-meters
- properties of gas, gas safety, combustion principles, pressure and flow rates
- relevant statutory and authorities' requirements related to installing and testing gas sub-meters
- SI system of measurements
- workplace and equipment safety requirements

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications for installing and testing gas sub-meters
- applying safety requirements throughout the work sequence, including applying equipotential bonding procedures and using personal protective clothing and equipment
- given the plans and specifications, installing and testing a gas sub-meter for a domestic residence, ensuring:
  - sustainability principles and concepts are applied throughout the installation
  - correct identification of location and operation of the meter
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and

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organisational quality procedures and processes
- communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles

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- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising

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and preventing hazards associated with:
- identifying and testing for electrical hazards
- hazardous materials and substances
- service lines
- surrounding structures and facilities
- trip hazards
- use of tools and equipment
- work site visitors and the public
- working at heights
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements may include:
- clean-up protection
- waste management.

Installation is to conform to:
- standards and requirements of local regulatory authority.

Quality assurance requirements may include:
- Australian standards
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:
- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Materials may include:
- approved fittings and jointing compound
- gas meters.

Tools and equipment may include:
- flaring tools
- hacksaws
- hand and power tools

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- ladders
- manual earth moving tools
- measuring equipment
- silver brazing equipment
- spanners
- test instruments
- testing equipment.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient use of material
  - selecting appropriate material to ensure minimal environmental impact.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing and/or gasfitting authority regulations
- recognised formulas or tables accepted by the regulatory authority
- relevant Australian standards
- safe work procedures relating to installing and testing gas sub-meters
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

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Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPGS3056A Install gas piping systems

Modification History

Prerequisite unit updated
Changes to performance criteria and required skills
Not equivalent to CPCPGS3031A

Unit Descriptor

This unit of competency specifies the outcomes required to select, install and test gas consumer piping carrying natural gas (NG), liquefied petroleum gas (LPG), or tempered liquefied petroleum gas (TLPG) up to 200kPa.

Application of the Unit

Site location for work application may be a customer's premises.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Identify gas piping system requirements.	1.1	Building plans and specifications and any special instructions are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with installing gas piping systems are adhered to throughout the work.
		1.3	***Quality assurance requirements*** for company operations are identified and adhered to.
		1.4	Gas load and design requirements are determined from design drawing or given information.
		1.5	Size of piping is calculated according to relevant Australian standards, authorities' and workplace requirements.
		1.6	Set out of piping systems is according to design drawing or instruction and complies with relevant Australian standards, authorities' and workplace requirements.
		1.7	Quantity and type of materials to conform to appropriate relevant Australian standards are estimated from design drawings or on-site dimensions.

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2	Prepare for installation.	2.1	***Materials*** and equipment are ordered and checked for compliance with docket and order form, and for acceptable condition.
		2.2	Appropriate ***tools and equipment*** for piping system installation, including personal protective equipment, are identified, selected and checked for serviceability.
		2.3	Appropriate testing equipment is selected.
		2.4	Work is planned in conjunction with others involved in or affected by the work.
		2.5	Work area and materials are prepared to support efficient installation of the system.
3	Install and test piping system.	3.1	Support system and installation method, including fixings, are selected to comply with manufacturer instructions, relevant Australian standards and workplace requirements.
		3.2	Pipe system is installed and jointed according to design drawing or instruction and complies with relevant Australian standards and workplace requirements.
		3.3	System is tested according to job requirements, relevant Australian standards and workplace requirements.
		3.4	Leaks are located and repaired and system is retested.
		3.5	***Sustainability principles and concepts*** are applied throughout the installation process.
		3.6	System is purged of air according to relevant Australian standards.
		3.7	Test data is recorded in format required by regulating authority and workplace requirements.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specifications.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations

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and workplace procedures.

4.3 ***Information*** is accessed and documentation completed according to regulatory and organisational requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - record data in writing
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and set out work
  - plan work with others
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to determine pipe requirements and install and test gas piping systems where the installation conforms to relevant Australian standards or requirements of the local regulatory authority
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- characteristics of piping materials, joining methods, fittings and sealants
- electrical safety and requisite precautions
- how to access relevant information, including codes and technical standards

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- job safety analysis (JSA) and safe work method statements(SWMS)
- material requirements determination process
- procedures for installing and testing gas piping systems, including brazing and mechanical pipe jointing
- properties of gas, gas safety, combustion principles, pressure and flow rates
- relevant statutory requirements related to installing and testing gas piping systems
- SI system of measurements
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, Australian standards and specifications to determine requirements, and installing and testing consumer gas piping systems
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, determining the requirements, installing and testing two gas piping systems, each comprising at least two materials and serving two Type A gas appliances; one being an NG pipeline from the outlet of a meter and the other being an LPG pipeline from a storage cylinder or tank, ensuring:
  - application of sustainability principles and concepts
  - correct identification of design and details of proposed piping system
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, relevant Australian standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources

This competency is to be assessed using standard and

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for assessment

authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and

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the practical requirements of the workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances
  - identifying and testing for electrical hazards
  - service lines
  - surrounding structures and facilities

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- trip hazards
- use of installation tools and equipment
- work site visitors and the public
- working at heights
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements may include:

- clean-up protection
- waste management.

Quality assurance requirements may include:

- Australian standards
- environment policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Materials may include:

- acceptable fittings and joints
- copper
- corrosion control materials
- mechanical jointed steel
- polyethylene (PE) and composite pipes
- unplasticised polyvinyl chloride (PVC-U)
- other approved materials.

Tools and equipment may include:

- chain blocks
- crimpers
- flaring tools and silver brazing equipment
- hacksaws
- hand and power tools
- hand trolleys
- hoists and jacks
- lifting and load shifting equipment and ladders
- measuring equipment
- oxy and arc welding equipment

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- pipe benders
- rollers
- spanners
- test instruments
- testing equipment
- threading equipment
- wrenches.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - choice of energy and water-efficient appliances
  - efficient use and recycling of material
  - correct handling of hazardous materials
  - disposing of waste material to ensure minimal environmental impact
  - selecting appropriate components to ensure minimal environmental impact.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- recognised formulas or tables accepted by the regulatory authority
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing and gasfitting authority regulations
- relevant Australian standards
- safe work procedures relating to installing and testing gas piping systems
- signage
- verbal, written and graphical instructions
- work bulletins

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- work schedules, plans and specifications.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPGS3057A Size consumer gas piping systems

Modification History

Prerequisite unit updated
Changes to descriptor, performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPGS3032A

Unit Descriptor

This unit of competency specifies the outcomes required to size consumer gas piping carrying natural gas (NG), liquefied petroleum gas (LPG) or tempered liquefied petroleum gas (TLPG) not exceeding 200kPa.

Application of the Unit

Site location for work application may be either a workplace or customer's premises.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Identify job requirements.	1.1	Installation requirements are determined from plans, load and specifications or site inspection.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with sizing consumer piping systems are adhered to throughout the work.
		1.3	***Quality assurance requirements*** for company operations are identified and adhered to.
		1.4	Piping materials are selected in compliance with appropriate standards, workplace and ***statutory and regulatory authorities'*** requirements.
		1.5	Gas loads and pipe lengths or instructions are calculated and determined from design drawings, instructions or site inspection.
		1.6	***Sustainability principles and concepts*** are applied throughout the sizing process.
2	Size gas piping systems.	2.1	Pressure drop is selected according to standards, regulating authorities' requirements, specifications and workplace requirements after authorities have been contacted for information regarding capacity of gas main and available meter outlet pressure.
		2.2	Appropriate sizing table is selected for gas supply type, piping material and pressure drop.
		2.3	Sizing procedure is undertaken consistent with standards, regulating authorities' requirements, specifications, manufacturer requirements and

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			workplace requirements.
3	Clean up.	3.1	Work area is cleared.
		3.2	***Information*** is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - seek information from relevant authorities
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to plan and set out work
- technical skills to size consumer gas piping supplying appliances at an operating pressure not exceeding 200 kPa
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- appliance pressure requirements and gas consumption requirements
- characteristics of piping materials, joining methods, fittings and sealants
- electrical safety and requisite precautions
- how to access relevant information, including codes and technical standards
- job safety analysis (JSA) and safe work method statements (SWMS)
- procedures for sizing consumer gas piping systems
- properties of gas, gas safety, combustion principles, pressure and flow rates
- relevant statutory and authority requirements related to sizing consumer gas piping

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systems
- SI system of measurements
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to determine requirements and sizing of gas piping systems
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, sizing consumer gas piping systems of at least two materials for up to five appliances each, at least one of them being a two-stage LPG system, ensuring:
  - application of sustainability principles and concepts
  - correctly identifying the sizing requirements of proposed piping system
  - correctly selecting and using appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will

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usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a

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number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- hazardous materials and substances
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- use of firefighting equipment
- use of first aid equipment
- use of tools and equipment
- workplace environment and safety.

Environmental requirements may include:

- clean-up protection
- waste management.

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Quality assurance requirements may include:

- Australian standards
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - selecting appropriate material to ensure minimal environmental impact
  - efficient use of material.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- recognised formulas or tables accepted by the regulatory authority
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing and/or gasfitting authority regulations
- relevant Australian standards
- safe work procedures relating to determining requirements and sizing consumer piping systems
- signage
- verbal, written and graphical instructions
- work bulletins

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- work schedules, plans and specifications.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPGS3059A Install LPG storage of aggregate storage capacity up to 500 litres

Modification History

Prerequisite unit updated
Minor changes throughout the unit
Not equivalent to CPCPGS3034A

Unit Descriptor

This unit of competency specifies the outcomes required to select, locate, install and test liquefied petroleum gas (LPG) storage facilities with a storage capacity of up to 500 litres; install either single or multiple cylinders; and test associated piping systems.
The storage is connected to consumer piping systems with operating pressures not exceeding 200kPa.

Application of the Unit

Site location for work application may be either domestic or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Identify LPG storage requirements.	1.1	Design, drawings, specifications and any special instructions are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with the installation of LPG storage facilities are adhered to throughout the work.
		1.3	***Quality assurance requirements*** for company operations are identified and adhered to.
		1.4	Gas load and design requirements are determined from plans, specifications, and job drawing or workplace instructions.
		1.5	Storage capacity is checked for compliance with regulatory authority and installation requirements.
		1.6	Type of storage is determined according to job and installation requirements.
		1.7	Cylinder and type of system (one or two-stage) are selected according to standards, job and installation requirements.
		1.8	Appropriate regulators are determined to meet capacity and load of the system according to installation requirements.
		1.9	Appropriateness of selected location to provide the required service is established in compliance with

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			standards and installation requirements.
		1.10	Quantity of materials required is calculated from design, drawings and specifications in compliance with installation requirements.
2	Prepare for installation.	2.1	***Materials*** and equipment are ordered and checked for compliance with docket and order form, and for acceptable condition.
		2.2	Appropriate tools and equipment for storage facility installation, including personal protective equipment, are identified, selected and checked for serviceability.
		2.3	Appropriate testing apparatus is selected.
		2.4	Work is planned in conjunction with others involved in or affected by the work.
		2.5	Work area and materials are prepared to support efficient installation of the system.
3	Install and test LPG storage system.	3.1	Cylinder supports and base, piping, fittings and components are selected in compliance with standards and installation requirements.
		3.2	Size and method of connection are selected in compliance with standards and installation requirements.
		3.3	Cylinder valve is purged according to standards.
		3.4	System from cylinder outlet is tested, purged and regulator adjusted to be gas-tight, in compliance with regulatory authority and installation requirements.
		3.5	Test data is recorded in format required by regulatory authority and installation requirements.
		3.6	***Sustainability principles and concepts*** are applied to work process.

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4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	***Tools and equipment*** are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	***Information*** is accessed and documentation completed according to installation requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - record test data in writing
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and set out work
  - plan work with others
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- electrical safety and requisite precautions
- how to access relevant information, including codes and technical standards
- job safety analysis (JSA) and safe work method statements (SWMS)
- material requirements determination process
- procedures for installing and testing gas storage facilities

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- properties of gas, gas safety, combustion principles, pressure and flow rates
- relevant statutory requirements related to installing and testing gas storage facilities
- SI system of measurements
- workplace and equipment safety requirements

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to determine requirements, and select, locate, install and test LPG storage systems
- applying safety requirements throughout the work sequence, including applying electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, determining the LPG storage facility requirements and installing and testing two LPG storage facilities up to 500 litre capacity, with operating pressures not exceeding 200kPa, of which one is a multiple cylinder installation, ensuring:
  - application of sustainability principles and concepts
  - correct identification of location, design and details of proposed storage installation
  - correct selection and use of appropriate processes, tools and equipment

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- completing all work to specification
- compliance with regulations, standards and organisational quality procedures and processes
- communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application

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- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and

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workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of tools and equipment
  - work site visitors and the public
  - working at heights
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements may include:

- clean-up protection
- waste management.

Quality assurance requirements may include:

- Australian standards
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Materials for installing LPG storage facilities:

- may include:
  - cylinder supports and bases
  - copper tubing
  - fitting and fixing materials
  - gas cylinders
  - gas regulators
  - non-metallic hose assemblies
  - stainless steel
  - other approved materials
- are to comply with job specifications and appropriate standards for the storage of LPG.

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Sustainability principles and concepts:

- cover the current and future social; economic and environmental use of resources
- may include:
  - selecting appropriate material to ensure minimal environmental impact
  - efficient use and recycling of material
  - efficient energy usage
  - disposing of waste material to ensure minimal environmental impact.

Tools and equipment may include:

- chain blocks
- forklifts
- grinders
- hacksaws
- hand and power tools
- hand trolleys
- hoists and jacks
- lifting and load shifting equipment
- manual brazing equipment
- measuring equipment
- rollers
- testing equipment.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- recognised formulas or tables accepted by the regulatory authority
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing and/or gasfitting authority regulations
- relevant Australian standards
- safe work procedures relating to determining

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requirements, and installing and testing LPG storage systems
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPGS3060A Install LPG storage of aggregate storage capacity exceeding 500 litres and less than 8KL

Modification History

Prerequisite unit updated
Changes to descriptor, performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPGS3035A

Unit Descriptor

This unit of competency specifies the outcomes required to select, locate, install and test liquefied petroleum gas (LPG) storage facilities with a storage capacity of more than 500 litres but less than 8KL.
The storage is connected to consumer piping systems with an operating pressure not exceeding 140kPa.

Application of the Unit

Site location for work application may be a customer's premises.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Identify installation requirements.	1.1	Building plans and specifications and any special instructions are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with installing LPG storage facilities are adhered to throughout the work.
		1.3	***Quality assurance requirements*** for company operations are identified and adhered to.
		1.4	Gas load and design requirements are determined from plans, specifications, and job drawing or workplace instructions.
		1.5	Storage capacity is checked for compliance with regulatory authorities' and installation requirements.
		1.6	Appropriate regulators are determined to meet capacity and load of the system according to installation requirements.
		1.7	Appropriateness of selected location to provide required service is established in compliance with standards and installation requirements.
		1.8	Quantity of required materials is calculated from design, drawings and specifications in compliance with installation requirements.

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2	Prepare for installation.	2.1	***Materials*** and equipment are ordered and checked for compliance with docket and order form, and for acceptable condition.
		2.2	Appropriate ***tools and equipment*** for ***installation*** of storage facility, including personal protective equipment, are identified, selected and checked for serviceability.
		2.3	Appropriate testing apparatus is selected.
		2.4	Work is planned in conjunction with others involved in or affected by the work.
		2.5	Work area and materials are prepared to support efficient installation of system.
3	Install and test LPG storage system.	3.1	LPG containers, piping, fittings and components are installed in compliance with standards and installation requirements.
		3.2	Regulators and associated pipework are installed in compliance with standards and installation requirements.
		3.3	Regulators are adjusted to provide working pressure in compliance with standards and installation requirements.
		3.4	System is purged according to standards.
		3.5	System is tested in compliance with standards and installation requirements.
		3.6	Test equipment is removed and test data recorded in format required by regulatory authority and installation requirements.
		3.7	***Sustainability principles and concepts*** are applied throughout the installation process.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.

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4.3 ***Information*** is accessed and documentation completed according to installation requirements.

4.4 Relevant authorities and supervisors are advised of job completion in compliance with regulatory and installation requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - inform relevant authorities and supervisors of completion of job
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - record data in writing
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and set out work
  - plan work with others
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to select, locate, install and test LPG storage facilities
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- electrical safety and requisite precautions
- how to access relevant information, including codes and technical standards
- job safety analysis (JSA) and safe work method statements (SWMS)

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- material requirements determination process
- procedures for installing and testing gas storage facilities
- properties of gas, gas safety, combustion principles, pressure and flow rates
- relevant statutory and authority requirements related to installing and testing gas storage facilities
- SI system of measurements
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to determine requirements, and select, locate, install and test LPG storage systems
- applying safety requirements throughout the work sequence, including applying equipotential bonding procedures and using personal protective clothing and equipment
- given the plans and specifications for a gas storage facility of capacity greater than 500 litres (but less than 8KL), determining the requirements, installing and testing first and second stage piping installation from an LPG storage container located and installed to specifications, ensuring:
    - application of sustainability principles and concepts
    - correct identification of location, design and details of proposed storage installation
    - correct selection and use of appropriate processes, tools and equipment
    - completing all work to specification
    - compliance with regulations, standards and organisational quality procedures and processes
    - communicating and working effectively and safely with others.

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Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a

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period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - hazardous materials and substances
  - identifying and testing for electrical hazards
  - service lines
  - surrounding structures and facilities

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- trip hazards
- use of tools and equipment
- work site visitors and the public
- working at heights
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements include:

- clean-up protection
- waste management.

Quality assurance requirements may include:

- Australian standards
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Materials for installing LPG storage facilities:

- may include:
  - container supports and bases
  - copper tubing
  - fitting and fixing materials
  - gas containers (500L–8KL)
  - gas regulators
  - non-metallic hose assemblies
  - other approved materials
- are to comply with job specifications and appropriate standards for the storage of LPG.

Tools and equipment may include:

- brazing equipment
- chain blocks
- flaring tools
- forklifts
- grinders
- hacksaws
- hand and power tools
- hand trolleys

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- hoists and jacks
- ladders
- lifting and load shifting equipment
- measuring equipment
- rollers
- pressure testing equipment.

Installation is normally a two stage system and:

- may be from storage container:
  - to point of use, requiring regulators
  - from storage to a second stage regulator
- installation and materials are to be according to relevant standards.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient use of material
  - efficient energy usage
  - selecting appropriate material to ensure minimal environmental impact.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing and/or gasfitting authority regulations
- relevant Australian standards
- safe work procedures relating to determining requirements, and installing and testing LPG storage systems
- signage

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- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Not applicable.

Custom Content Section

Not applicable.

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CPCPGS3061A Install and commission Type A gas appliances

Modification History

This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

- Performance criterion and item in required knowledge section added

Not equivalent to CPCPGS3058A Install and commission Type A gas appliances

Unit Descriptor

This unit of competency specifies the outcomes required to install and commission Type A gas appliances approved for use with natural gas (NG) or liquefied petroleum gas (LPG) up to 200kPa.
Type A gas appliances are badged appliances of less than 500 megajoules (MJ) for which an approval scheme exists. They include but are not limited to space heaters, ducted heating systems, heated water storage, instant heated water heaters, decorative heaters, and gas stoves and hot plates.

Application of the Unit

Site location for work application may be either domestic or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Building plans and specifications and any special instructions are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with installing and commissioning Type A gas appliances are adhered to throughout the work.
		1.3	***Quality assurance requirements*** for company operations are identified and adhered to.
		1.4	Appropriate work notices and required documentation are completed and dispatched according to the authorities' requirements.
		1.5	Tasks are planned in conjunction with others involved in or affected by the work.
		1.6	***Tools, equipment*** and ***materials***, including personal protective equipment, are selected and checked for serviceability.
		1.7	Work area is prepared to support efficient installation of Type A gas appliances.
2	Identify appliance requirements	2.1	Appropriate appliance for the gas supply type is selected according to the job specification, ensuring the currency of the Australian Gas Association (AGA) or Australian Liquefied Petroleum Gas Association (ALPGA) approval number.
		2.2	Existing piping is checked to ensure its compliance with relevant Australian standards and that its capacity is

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			adequate for the additional load.
		2.3	Appliance is located in conformance to regulatory requirements and relevant Australian standards, and is appropriate for appliance use and for piping, flue and ventilation requirements.
3	Determine installation requirements.	3.1	Appropriate pipe fittings and components for the installation are selected according to relevant Australian standards.
		3.2	Size of branch line is calculated according to regulating authorities' requirements.
		3.3	Ventilation openings and source of air supply are determined that conform to relevant Australian standards and format required by the job specifications.
		3.4	Quantity and type of materials and other components required are estimated from design drawing or on-site dimensions.
		3.5	Requirements for natural gas or LPG appliance regulator installation are determined.
4	Install appliance.	4.1	Piping system is installed according to design drawing or instruction and relevant Australian standards.
		4.2	Pipe system is tested according to relevant Australian standards and regulatory authorities' requirements.
		4.3	Appliance is installed according to relevant Australian standards and manufacturer instructions and without damage or distortion to surrounding environment or other services.
		4.4	***Sustainability principles and concepts*** are applied throughout the installation.
5	Commission appliance.	5.1	Electrical safety check is conducted.
		5.2	Consumer piping is purged and joints are reconnected according to workplace requirements.
		5.3	Appropriate testing instrument is selected and operated, with data being recorded according to workplace

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			requirements.
		5.4	Pipe system is tested according to relevant Australian standards and statutory and regulatory authorities' requirements.
		5.5	Appliance is adjusted and reassembled and operation is checked according to manufacturer specifications.
		5.6	Appropriate test is carried out to ensure that there is no leakage or spillage of combustion products into the circulating air system.
		5.7	Operation of appliance is explained to customer.
6	Clean up.	6.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		6.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		6.3	***Information*** is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete work notices and other relevant documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - record data in writing
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and set out work
  - plan work with others
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- electrical safety and requisite precautions
- how to access relevant information, including codes and technical standards
- job safety analysis (JSA) and safe work method statements (SWMS)
- material requirements determination process
- procedures for installing and commissioning Type A gas appliances, including flashing

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and requirements for flues and ventilation
- procedures for using carbon monoxide testing equipment to check appliances for spillage
- properties of gas, gas safety, combustion principles, pressure and flow rates
- relevant statutory requirements related to installing and commissioning Type A gas appliances
- SI system of measurements
- workplace and equipment safety requirements

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of:
	• locating, interpreting and applying relevant information, relevant Australian standards and specifications to determine the requirements for installing and commissioning Type A gas appliances
	• applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
	• given the plans and specifications, installing and commissioning a water heater, space heater, and cooking appliance; at least one of which is to be a domestic installation, one a commercial installation, and one a fan assisted flued appliance, ensuring:
	  • application of sustainability principles and concepts
	  • correct identification of location, design and details of proposed installations

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- correct selection and use of appropriate processes, tools and equipment
- completing all work to specification
- compliance with regulations, relevant Australian standards and organisational quality procedures and processes
- communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- research resources, including industry-related systems information
- safety data sheets.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application

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- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising

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and preventing hazards associated with:
- electricity
- hazardous materials and substances
- identifying and testing for electrical hazards
- service lines
- surrounding structures and facilities
- trip hazards
- use of tools and equipment
- work site visitors and the public
- working at heights
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements may include:
- clean-up protection
- waste management.

Quality assurance requirements may include:
- Australian standards
- environment policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:
- chain blocks
- drills
- flaring tools
- forklifts
- hacksaws
- hand trolleys
- hoists and jacks
- lifting and load shifting equipment
- limited height scaffolding
- measuring equipment
- rollers
- silver brazing equipment
- spanners

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- test equipment and instruments
- tin snips
- wrenches.

Materials for installing and commissioning Type A gas appliances:

- are to include Type A:
  - gas appliances
  - piping materials
  - flues
  - ventilation materials and components
- are to comply with relevant Australian standards for installing and commissioning Type A gas appliances.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - choice of energy and water-efficient appliances
  - efficient use and recycling of material
  - correct handling of hazardous materials
  - disposing of waste material to ensure minimal environmental impact
  - selecting appropriate components to ensure minimal environmental impact.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing and gasfitting authority regulations
- recognised formulas or tables accepted by the regulatory authority
- relevant Australian standards

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- safe work procedures relating to installing and commissioning Type A gas appliances
- safety data sheets (SDS)
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Plumbing and services

Custom Content Section

Not applicable.

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CPCPGS4011C Design and size consumer gas installations

Modification History

This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

- Reference to standard updated in required knowledge section

Equivalent to CPCPGS4011B Design and size consumer gas installations

Unit Descriptor

This unit of competency specifies the outcomes required to design, size and document a consumer's gas installation, including consumer piping operating up to a pressure of 200kPa, fluing, ventilation and appliance installation associated with natural gas (NG), simulated natural gas (SNG), liquefied petroleum gas (LPG) and tempered liquefied petroleum gas (TLPG) for a building of minimum four floors and multiple buildings supplied through one gas source (billing meter or storage tank).
It covers preparing for work, determining gas installation design requirements, detailed planning of the layout, and completing work finalisation processes, including records and documentation.

Application of the Unit

Site location for work application may be either domestic or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

Work associated with this unit is undertaken within the scope of AS5601 Gas installations and local licensing requirements (gas, electrical and plumbing).

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for planning	1.1	Nature and scope of planning task are identified and confirmed.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with planning, sizing and documenting layout of ***gas installations*** are adhered to throughout the work.
		1.3	Work is organised and sequenced in conjunction with others involved in or affected by the work.
		1.4	***Tools and equipment*** required for planning, sizing and documenting layout of gas installations, including personal protective equipment, are selected and checked for serviceability, and faults are rectified or referred for action.
		1.5	Work area in which planning process is to be conducted is prepared.
2	Identify system requirements.	2.1	***Information*** and specifications for required work are obtained and confirmed, if necessary by site inspection.
		2.2	Regulations and Australian standards relevant to the work are consulted and applied to all aspects of the work.
		2.3	Quantity, location and type of take-off materials and fixtures are determined from plans and specifications.
		2.4	Gas installations are sized according to relevant Australian standards, and ***statutory and regulatory authority*** and workplace requirements.

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3	Plan system layout.	3.1	Layout of gas installations is planned according to building plans, relevant Australian standards and workplace procedures.
		3.2	***Materials*** required are specified and optimised according to relevant Australian standards from proposed design.
		3.3	Plans are recorded according to regulatory authorities' and workplace requirements.
		3.4	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
4	Restore work area.	4.1	Work area is restored according to workplace procedures.
		4.2	Tools and equipment used in the process are refurbished and left according to workplace procedures.
		4.3	Information is accessed and documentation, including work backup, is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - identify requirements, including system requirements
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - access and understand site-specific instructions in a variety of media
  - read and interpret:
    - documentation from a variety of sources
    - regulations, relevant Australian standards, plans, specifications and drawings
  - record plans in writing and complete workplace documentation
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - organise and sequence tasks with others
  - plan and set out work
- technical skills to plan, size and document layout of gas installations for single and multiple buildings consisting of a minimum of four floors
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- AS/NZS 5601 Gas installations, including the use of tables
- building and construction industry terminology
- drawing and sketching techniques, including the use of conventional symbols

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- gas safety, including combustion characteristics and effects
- general electrical safety requirements
- impact of ventilation on design
- job safety analysis (JSA) and safe work method statements(SWMS)
- planning, sizing and layout of gas installations
- processes for accessing information and for calculating material requirements
- relevant statutory and authority requirements related to planning, sizing and layout of gas installations
- SI system of measurement
- types and properties of fuel gas, including pressure and flow rates
- types, characteristics, uses and limitations of gas pipe work and reticulation materials, including joining techniques and systems
- use of computers and computer-aided design (CAD) software
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, relevant Australian standards and specifications to the planning, sizing and layout of gas installations
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- designing, sizing and documenting the layout of three gas installations, which are to include any combinations covering:
  - pipe sizing and pressures up to 200kPa
  - at least one NG installation
  - at least one LPG installation
  - at least one domestic installation
  - at least one commercial installation
  - a caravan installation
  - a marine installation, including the installation of an LPG leak detection system in a mono hull vessel
- installations planned and documented must include:
  - multiple buildings
  - a two stage LPG system
  - five or more gas appliances
  - domestic and commercial Type A gas appliances
  - a common flue system
  - a minimum of three piping materials

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- an over-pressure protection device
- a subsidiary meter
- plans and documentation should ensure:
  - application of sustainability principles and concepts
  - identification, evaluation and incorporation of sustainability principles and concepts into the design
  - correct identification of location, design and details of proposed services
  - correct selection and use of appropriate processes, tools and equipment
  - completion of all work to specification
  - compliance with regulations, relevant Australian standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and

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other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electrical components and safety
  - gas fires and explosions
  - hazardous materials and substances
  - other machines
  - surrounding structure and facilities
  - trip hazards
  - underground services
  - use of tools and equipment
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements may include:

- air pollution
- clean-up protection
- environmental protection
- waste management.

Gas installations may include:

- liquefied petroleum gas
- natural gas
- simulated natural gas
- tempered liquefied petroleum gas.

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Tools and equipment may include:

- computers running appropriate CAD software
- drawing instruments
- measuring equipment.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - gas regulations
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards, including AS5601 Gas installations
- safe work procedures relating to planning, sizing and documenting the layout of gas installations
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Materials may include:

- building plans and specifications.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - use of efficient design principles to ensure minimal environmental impact
  - incorporation of efficient use of material into

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the design, including recycling of material
- choice of efficient energy and water appliances
- correct handling of hazardous materials
- disposing of waste material to ensure minimal environmental impact.

Unit Sector(s)

Plumbing and services

Custom Content Section

Not applicable.

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CPCPGS4022A Service Type A gas appliances

Modification History

Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPGS4012A

Unit Descriptor

This unit of competency specifies the outcomes required to diagnose and repair faults on domestic and commercial Type A gas appliances.

Application of the Unit

Site location for work application may be a customer's premises.

Licensing/Regulatory Information

Work associated with this unit is undertaken within the scope of AS5601 (AG601) Gas installations and local licensing requirements (gas, electrical and plumbing).

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	Prepare for work.	1.1	Appliance specifications and servicing and manufacturer manuals are obtained for planned work activity.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with servicing ***Type A gas appliances*** are adhered to throughout the work.
		1.3	***Quality assurance requirements*** for company operations are identified and adhered to.
		1.4	***Tools, equipment*** and ***materials*** are selected consistent with servicing needs, checked for serviceability, and faults are rectified or referred for action.
		1.5	Tasks are planned in conjunction with others involved in or affected by the work.
		1.6	Work area is prepared to support efficient conduct of servicing the Type A gas appliance.
		1.7	Electrical safety checks and isolation procedures are completed and recorded to manufacturers' and other ***statutory and regulatory authorities'*** requirements before servicing work is commenced.
		1.8	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
2	Disassemble and assemble Type A gas appliances.	2.1	Appliance specifications and servicing and manufacturer manuals are obtained and analysed to confirm assembly and disassembly techniques and sequences.
		2.2	Preliminary diagnosis is completed to focus and minimise disassembly requirement.
		2.3	Disassembly and reassembly are carried out safely and in a sequential manner.
		2.4	Appliance is assessed to ensure it complies with relevant standards and manufacturer specifications prior to commissioning and return to service.

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3	Diagnose and remedy electrical and electronic circuitry faults.	3.1	Electrical safety checks and isolation procedures are completed and recorded to manufacturer and other authorities' requirements before servicing work is commenced.
		3.2	Electrical circuit and wiring diagrams are read and correctly interpreted to identify potential fault pathways and locations.
		3.3	Appropriate ***testing techniques***, procedures and equipment are selected and applied to diagnose faults in circuit wiring, components and ignition systems.
		3.4	Cause of fault is determined and confirmed.
		3.5	Most appropriate corrective action is selected after a complete analysis of options.
		3.6	Repair, replacement and ***adjustment*** action is taken according to manufacturer specifications or service manuals.
		3.7	Appliance is assessed to ensure it complies with relevant standards and manufacturer specifications prior to commissioning and return to service.
4	Diagnose and remedy gas system faults on Type A gas appliances.	4.1	Electrical and gas safety checks and isolation procedures are completed and recorded to manufacturer and other authorities' requirements before servicing work is commenced.
		4.2	Gas system plans and diagrams are read and correctly interpreted to identify potential fault pathways and locations.
		4.3	Appropriate testing techniques, procedures and equipment are selected and applied to diagnose gas system faults.
		4.4	Flue gases are analysed according to recognised industry practice and local authorities' requirements.
		4.5	Cause of fault is determined and confirmed.
		4.6	Most appropriate ***corrective action*** is selected after a complete analysis of options.

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		4.7	Repair, replacement and adjustment action is taken according to manufacturer specifications or service manuals.
		4.8	Appliance is assessed to ensure it complies with relevant standards and manufacturer specifications prior to commissioning and return to service.
5	Clean up work area.	5.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice, and job specification.
		5.2	Tools and equipment are cleaned, checked, serviced and stored according to manufacturer recommendations and workplace procedures.
		5.3	***Information*** is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - identify requirements, including system requirements
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - read and interpret:
    - documentation from a variety of sources
    - regulations, standards, plans, specifications and drawings
  - record plans in writing and complete workplace documentation
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - organise and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
  - prepare for the work, fault diagnosis, disassembly, repair and replacement, reassembly and completion of work finalisation processes
  - service equipment and complete job records
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- AS5601 Gas installations, including the use of tables
- basic electrical theory, including:

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  - characteristics of electromotive force (EMF)
  - characteristics of fuses, circuit breakers, residual current devices and earthing systems
  - combustion characteristics and effects
  - conduction
  - current flow
  - ignition systems
  - insulation
  - isolation procedures
  - Ohm's law
- burners and burner adjustment
- characteristics of conversion from one gas type to another
- classification of appliances and identification of related components
- electrical safety, including isolation procedures and requisite precautions
- gas appliance regulators
- gas appliance thermostats
- gas safety, including:
  - combustion characteristics and effects
  - isolation procedures
- job safety analysis (JSA) and safe work method statements (SWMS)
- operation of flame failure systems used in Type A gas appliances
- processes for accessing information and for calculating material requirements
- SI system of measurement
- types and properties of fuel gas, including pressure and flow rates
- workplace and equipment safety requirements

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

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Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to determine requirements and maintain Type A gas appliances
- applying safety requirements throughout the work sequence, including applying equipotential bonding procedures and using personal protective clothing and equipment; and isolating appliances from gas and electrical services
- performing the following servicing activities and functions:
  - application of sustainability principles and concepts
  - disassembly, reassembly, testing and recommissioning of a minimum of two different Type A gas appliances
  - conduct evaluative tests on electrical and electronic components, including central processing units, printed circuit boards and associated parts, in order to diagnose and remedy faults and malfunctions
  - conduct evaluative tests on gas systems to diagnose and remedy faults and malfunctions on the components listed in the range statement
  - convert a Type A gas appliance to operate on another gas type, according to AS5601, any local utility's requirements and manufacturer specifications
- servicing activities and function should ensure:
  - correct selection and use of appropriate processes, tools and equipment
  - completion of all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will

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usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a

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number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- identifying and testing for electrical hazards
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electrical components and safety
  - gas fires and explosions
  - hazardous materials and substances
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of tools and equipment
  - work site visitors and the public

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- working at heights
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements may include:

- air pollution
- clean-up protection
- waste management.

Type A gas appliances:

- are badged appliances of less than 500 megajoules (MJ) for which an Australian Gas Association (AGA) and Australian Liquefied Petroleum Gas Association (ALPGA) approval scheme exists
- include:
  - decorative heaters
  - ducted heating systems
  - gas stoves and hot plates
  - heated water storage
  - instant heated water heaters
  - space heaters
- mechanical components and gas appliance systems, which may include:
  - combustion chambers
  - heat exchangers
  - primary flues.

Quality assurance requirements may include:

- AGA requirements
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- maintenance of Type A gas appliances complying with appropriate Australian standards
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:

- lifting and load shifting equipment, including:
  - chain blocks

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- forklifts
- hand trolleys
- hoists and jacks
- rollers
- measuring equipment
- test equipment and instruments, including:
  - dual probe voltage tester
  - manometers
  - multi-meters
  - megohmmeter
  - hand and power tools
  - spanners
  - wrenches.

Materials for the maintenance of Type A gas appliances:

- may include:
  - piping materials
  - regulators and meters
  - Type A gas appliances
  - other approved materials
- are to comply with appropriate standards for the maintenance of Type A gas appliances.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient energy use
  - efficient use and recycling of material
  - correct handling of hazardous materials
  - disposing of waste material to ensure minimal environmental impact
  - selecting appropriate components to ensure minimal environmental impact.

Testing techniques include de-energised and energised tests,

- capacitors
- electric motors

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which may include:

- heat activated switches
- ignition systems (basic, ignition and re-ignition, flame safeguard systems, hot surface ignition)
- printed circuit boards
- relay time delay and conventional
- solenoid coils
- thermistors
- thermostats, direct and indirect wired
- time clocks, mechanical and electronic
- transformers.

Adjustment and calibration are to include:

- dip switches
- fan limit controls
- fan speed settings
- heat anticipators
- thermostats.

Corrective action, such as component removal and replacement, is to include:

- burners
- combination controls
- fans
- pilots
- rail cocks, thermostats and associated components
- solenoid valve regulators
- thermocouples.

Information may include:

- charts and hand drawings
- diagrams, sketches and graphics
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- maps
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing and gasfitting authority regulations

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- relevant Australian standards, including AS/NZS3000 Electrical installations, AS/NZS4836 Safe working on low-voltage electrical installations, AS5601 (AG601) Gas installations
- safe work procedures relating maintaining Type A gas appliances
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPGS4023B Install, commission and service Type B gas appliances

Modification History

This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

- Reference to standards updated in required knowledge section and range statement

Equivalent to CPCPGS4023A Install, commission and service Type B gas appliances

Unit Descriptor

This unit of competency specifies the outcomes required to install, commission and service Type B gas appliances, from the gas isolation valve and electrical isolation switch to the flue spigot on the appliance, according to current and relevant standards.

Application of the Unit

This unit of competency supports the needs of appropriately qualified experienced persons with a responsibility for interpreting and applying pre-existing design specifications; gaining approvals from authorities; preparing for work; installing gas system components and associated electrical or electronic components and controls; testing, adjusting, commissioning and servicing Type B gas appliances; and completing work finalisation processes, including formal recording and reporting requirements.

Licensing/Regulatory Information

Before satisfying this unit, the candidate requires a restricted electrical licence or equivalent to connect and disconnect appliances according to the requirements of the particular State or Territory.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Obtain authority to undertake work on Type B gas appliances.	1.1	***Design specification*** for ***Type B gas appliance*** to be installed and commissioned is accessed, analysed, interpreted and confirmed through a detailed site inspection.
		1.2	Design specification matters requiring clarification are resolved through liaison with designer and gas authorities.
		1.3	Formal authority to proceed with installation and commissioning is obtained before commencing work, according to ***regulatory and code of practice requirements***.
		1.4	Regulatory and code of practice recording and reporting requirements are satisfied at appropriate times throughout the work sequence.
2	Prepare for work.	2.1	***Work health and safety*** (WHS) requirements associated with the workplace environment and installing, commissioning and servicing Type B gas appliances are accessed, interpreted and followed throughout the work.
		2.2	Gas system components, electrical or electronic components and controls, and other required installation materials are identified from the design specification and obtained for the work.
		2.3	Component specifications and manufacturer servicing manuals are obtained for planned work activity.
		2.4	Tasks are planned in conjunction with others involved in

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			or affected by the work.
		2.5	***Tools and equipment***, including personal protective equipment, are selected consistent with installation, commissioning and servicing needs and checked for serviceability, and any faults are rectified or reported.
		2.6	***Quality assurance requirements*** for the work sequences are identified and followed.
		2.7	Work area is prepared to support efficient installation, commissioning and servicing of Type B gas appliance.
		2.8	Gas system and electrical safety checks and isolation procedures are completed and recorded to manufacturer and other authorities' requirements before commencing work.
		2.9	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
3	Install Type B gas appliances.	3.1	Appliance components, including ***valve trains***, ***burners*** and associated pipework and flue systems, are installed according to approved design specifications.
		3.2	Ventilation systems are installed according to approved design specifications.
		3.3	Electrical components, including terminations, are installed according to design specifications and regulatory requirements.
		3.4	Electrical wiring and wiring enclosures are installed according to design specifications and regulatory requirements.
		3.5	Installations are visually inspected at each stage of the work to ensure compliance with specifications and absence of damaged or faulty equipment and materials.
4	Commission and test Type B gas appliances.	4.1	***Testing and servicing*** equipment appropriate to the requirement is selected, checked and prepared for use.
		4.2	Gas and electrical safety checks and isolation procedures, including purging, are completed and recorded to manufacturer and other authorities' requirements before testing and commissioning are

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			commenced.
		4.3	***Operational parameters of individual components*** are tested and adjusted to conform to specifications.
		4.4	Appliance operations are tested first without and then with fuel, adjustments are completed as necessary and results recorded according to approving authorities' requirements.
		4.5	Flue gases are analysed according to recognised industry practice and other authorities' requirements.
5	Service Type B gas appliances.	5.1	Nature and possible cause of faults or out of specification performance are identified from defect reports or operational records.
		5.2	Electrical and gas safety checks and isolation procedures are completed and recorded to manufacturer and other authorities' requirements before servicing work is commenced.
		5.3	Plans and diagrams are read and correctly interpreted to identify potential gas system and electrical fault pathways and locations.
		5.4	Appropriate testing techniques, procedures and equipment are selected and applied to diagnose system faults or discrepancies.
		5.5	Cause of fault or out of specification performance is identified and confirmed.
		5.6	Options for correction are thoroughly analysed and most appropriate corrective action is selected.
		5.7	Repair, replacement or adjustment is made according to manufacturer specifications or service manuals.
		5.8	Appliance is assessed to ensure compliance with relevant standards and manufacturer specifications prior to recommissioning and returning to service.

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6	Clean up work area.	6.1	Work area is cleared and materials disposed of, reused or recycled according to commonwealth, state and territory legislation and workplace procedures.
		6.2	Tools and equipment are cleaned, checked, serviced and stored according to manufacturer recommendations and workplace procedures.
		6.3	Information is accessed and documentation completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - liaise with designer and authorities
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation, including recording test results
  - read and interpret:
    - defect reports
    - design specification
    - documentation from a variety of sources
    - operational records
  - submit work notices
- numeracy skills to interpret and apply mathematical information
- planning and organising skills to plan work with others
- technical skills to:
  - follow safe work procedures relating to the installation, commissioning and servicing of Type B appliances
  - interpret information, including:
    - charts and hand drawings
    - plans, sketches and graphics
    - instructions issued by authorised organisational or external personnel
    - job drawings
    - manufacturer specifications and instructions
    - maps
    - material safety data sheets (MSDS)
    - memos

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    - organisation work specifications and requirements
    - plans, diagrams and specifications
    - signage
    - verbal or written and graphical instructions
    - work bulletins
    - work schedules
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- Australian standards, including the use of tables:
  - AS3814 (AG501) Industrial and commercial gas appliances
  - AS5601 (AG601) Gas installations/AS/NZS5601
  - relevant aspects of AS3814 Industrial fuel fired appliances, AS2593 Boilers – Unattended and limited attendance and AS/NZS3000 Electrical installations
- basic electrical theory, including:
  - Ohm's law
  - current flow
  - conduction
  - insulation
  - ignition systems
  - characteristics of fuses, circuit breakers, residual current devices and earthing systems
  - characteristics of electromotive force (EMF)
  - electrical safety, including isolation procedures and requisite precautions
  - electrical terminology and conventional symbols
- flue gas analysis techniques and processes
- gas terminology and conventional symbols
- gas safety, including:
  - isolation procedures
  - combustion characteristics and effects
- job safety analysis (JSA) and safe work method statements (SWMS)
- programmable logic controller (PLC) systems, including remedial programming techniques
- purging requirements, techniques and critical calculation processes
- SI system of units
- sources of information and processes for the calculation of material requirements
- types and properties of fuel gas, including pressure and flow rates
- types, characteristics, uses and limitations of electrical and electronic componentry and

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control systems
- types, characteristics, uses and limitations of Type B gas appliance components
- ventilation techniques and calculation processes
- workplace and equipment safety requirements

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

It may be assessed on its own or as part of an integrated assessment activity involving planning and conducting the installation of at least one significant Type B gas appliance.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating interpreting and applying relevant information, standards and specifications to determine requirements of and maintain Type B appliances
- applying safety requirements throughout the work sequence, including:
  - using personal protective clothing and equipment
  - isolating appliances from gas and electrical services
  - planning and conducting installation of at least one significant Type B appliance, which includes:
    - application of sustainability principles and concepts
    - obtaining required authorities

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- planning work
- installing gas, ventilation and electrical componentry
- installing electrical control system
- completing all required tests and sequences
- commissioning the appliance
- completing all required documentation
- communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package

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- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

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Design specification may include:

- air controls
- combustion air blowers
- flame safe guards
- gas pressure regulation
- gas valve trains
- manual shut-off valves
- markings and instructions
- materials
- over-pressure protection systems
- process controls
- safety shut-off valve systems.

Type B gas appliances:

- include those above 10 megajoules (MJ) for which a certification scheme does not exist
- may use:
  - combination fuels
  - liquefied petroleum gas
  - natural gas
  - tempered liquefied petroleum gas
- may have special requirements for design and operation, including:
  - after burners – process
  - air gas mixing machines and mixing blowers
  - atmosphere generators and special atmospheres
  - direct gas fired air heaters
  - high input gas fired appliances
  - incinerators and generators
  - multi-fuel firing systems
  - ovens – direct fired
  - smoke ovens – direct fired
  - stationary gas engines and turbines
  - steam and heated water boilers
  - water heaters
- Type B appliance operation specifications will include:
  - flame establishment periods
  - interlocks
  - operation of gas appliance and burners
  - operational sequences
  - start gas rates

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- planning installation of a Type B gas appliance will include determination of site suitability and confirmation of the appropriateness of:
  - electrical supply
  - gas supply and sizing
  - proposed appliance security and lighting measures
  - proposed component handling and positioning measures
  - proposed foundation and supports
- commissioning procedure for a Type B appliance, including:
  - preliminary inspection
  - activation run without fuel
  - activation run with fuel
  - operation and completion stages.

Regulatory and code of practice requirements include:

- statutory and regulatory authorities' requirements that may include:
  - statutory plumbing authority
  - statutory gasfitting authority
- state or territory and local statutory regulatory authority and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing and/or gasfitting authority regulations
- environmental regulatory requirements may include:
  - air pollution
  - clean-up protection
  - waste management
- relevant Australian standards, including:
  - AS3814 Industrial fuel fired appliances
  - AS2593 Boilers - Unattended and limited attendance
  - AS/NZS3000 Electrical installations
  - AS/NZS4836 Safe working on low-voltage electrical installations
  - AS5601 (AG601) Gas installations/AS/NZS5601

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- AS3814 (AG501) Industrial and commercial gas appliances.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials, including hazardous materials and substances
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electrical components and safety
  - gas fires and explosions
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of tools and equipment
  - work site visitors and the public
  - working at heights
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Tools and equipment may include:

- hand tools, such as wrenches and spanners
- measuring equipment
- power tools
- testing equipment and instruments, including:
  - manometer
  - multi-meter
  - dual probe voltage tester
  - flue gas analysis equipment
  - hand pump pressure kit
  - Pitot tube
  - insulation resistance tester
  - megohmmeter
  - power point tester
  - neon tester
  - volt stick
- lifting and load shifting equipment, including:

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- hand trolleys
- rollers
- forklifts
- chain blocks
- hoists and jacks.

Quality assurance requirements may include:

- Australian Gas Association (AGA) requirements
- Environment Protection Authority
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient energy use
  - efficient use and recycling of material
  - correct handling of hazardous materials
  - disposing waste material to ensure minimal environmental impact
  - selecting appropriate components to ensure minimal environmental impact.

Valve trains include:

- flow and ratio controls
- gas pressure regulators and controllers
- manual isolation valves
- safety shut-offs.

Burners include:

- atmospheric
- nozzle
- oxygen enhanced
- packed power
- pre-mix.

Testing and servicing of Type B gas appliances will require:

- use of a hand-held programmer to monitor circuit conditions and to edit program (to make minor changes)

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- materials that comply with appropriate standards for the maintenance of Type B gas appliances.

Operational parameters of individual components include:

- air flows
- all safety and operating controls
- combustion conditions
- gas rates
- purge times.

Unit Sector(s)

Plumbing and services

Custom Content Section

Not applicable.

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CPCPIG2021A Design domestic urban irrigation systems

Modification History

Prerequisite unit added to unit
Changes to descriptor, performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPIG2011A

Unit Descriptor

This unit of competency specifies the outcomes required to prepare basic designs and irrigation drawings for domestic irrigation systems.

Application of the Unit

Work is normally undertaken in a drafting office environment. Location for drawing and design application may be either domestic or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Site survey is conducted of proposed irrigation area according to client requirements.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with design of domestic irrigation systems are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment*** for preparing basic irrigation designs and drawings are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient design of domestic irrigation systems.
2	Identify drawing requirements.	2.1	Areas requiring irrigation and ***system design components*** are identified.
		2.2	***Information*** is obtained on the soil type, ground slope, contours and prevailing wind.
		2.3	Underground services, buildings, paths and other permanent structures are located and noted.
		2.4	Water supply is located and its influence on design requirements is determined.
		2.5	Appropriate emitters are selected to suit function and

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			design requirements.
3	Design irrigation system.	3.1	Site plan is drawn to include structures, paths and property boundaries.
		3.2	Garden areas are sketched to include locations of lawns, garden beds, trees, vegetable patches or ferneries.
		3.3	Pipe runs and water emitters are sketched to design requirements.
		3.4	Sizes of pipes are calculated using standard data and information is recorded in required format.
		3.5	List of ***materials*** is compiled to include number and type of water emitters, control valves, quantities of pipes, fittings and components.
		3.6	***Sustainability principles and concepts*** are applied throughout the design process.
		3.7	Drawing and design are submitted for approval.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - compile list of materials
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - record information
- technical skills to design and draw a domestic urban irrigation system, including:
  - identifying material requirements
  - selecting and locating components
  - site layout
  - site requirements and structures
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
- plan and sequence tasks with others
- plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

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Required knowledge

- job safety analysis (JSA) and safe work method statements (SWMS)
- process and workplace requirements for basic irrigation design
- processes for accessing information and for calculating material requirements
- properties of water, including pressure and flow rates
- relevant statutory and authority requirements related to drawing and installing irrigation systems
- SI system of measurement
- specifications of the range of irrigation products available
- standards applicable to the installation
- technologies for irrigation measurement and drawings
- various types of irrigation systems, including types of materials and components used
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to the design of domestic irrigation systems
- applying safety requirements throughout the work sequence, including electricity safety requirements and the use of personal protective clothing and equipment
- given the site plan and specifications for the irrigation of a 200 square metre garden (of lawn, shrubs, trees and flowers), designing and preparing a drawing of the system, incorporating automatic timers and controls, varying sprinkler heads and zones, and indicating the materials required (by number and type), ensuring:
    - application of sustainability principles and concepts
    - correct identification of location, design and details of proposed system
    - correct selection and use of appropriate processes, tools and equipment
    - completing all work to specification
    - compliance with regulations, standards and organisational quality procedures and processes
    - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and

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environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace

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- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials, including hazardous materials and substances
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- use of firefighting equipment
- use of first aid equipment
- use of tools and equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

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Quality assurance requirements may include:

- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- calculator
- computer design software
- drawing and drafting equipment
- laser measuring devices
- measuring equipment.

System design components may include:

- backflow prevention devices
- controls
- pipework
- valves
- water emitters, which may include:
  - drip emitters
  - gear drive
  - impact
  - in-line turbo drippers
  - mist sprays
  - oscillating
  - pop up
  - pulsating
- selection of water emitters, based on:
  - automatic control systems
  - manufacturer specifications
  - physical site conditions
  - site requirements
  - subsoil systems
  - types of plants requiring irrigated water.

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Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- maps
- organisation work specifications and requirements
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to the design of domestic irrigation systems
- signage
- sketches and plans, including job plans
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Materials may include:

- drafting and drawing equipment
- plans.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient use of material
  - minimising water wastage
  - considering use of alternative water supply
  - selecting appropriate components and material to ensure minimal environmental impact.

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Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPIG3021A Set out, install and commission irrigation systems

Modification History

Prerequisite unit updated
Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPIG3011A

Unit Descriptor

This unit of competency specifies the outcomes required to set out, install and commission irrigation systems.

Application of the Unit

Site location for work application may be either domestic or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with setting out, installing and commissioning irrigation systems are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment*** for setting out, installing and commissioning irrigation systems, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient setting out, installation and commissioning of irrigation systems.
2	Identify installation requirements.	2.1	Irrigation system requirements are identified from plans, specifications and relevant ***information***.
		2.2	Underground services are located and identified.
		2.3	Flow rate and water pressure are checked for compliance with plans and specifications.
		2.4	Piping and system components are selected to comply with standards, plans and specifications.
		2.5	***Materials*** and equipment are identified, ordered and collected according to workplace procedures.
		2.6	Materials and equipment are checked for compliance with standards, docket and order form, and for acceptable condition.

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3	Install and commission irrigation system	3.1	Irrigation pipes are set out according to plans, specifications and site requirements.
		3.2	Pipe trenches are excavated according to plans and specifications.
		3.3	Pipe system is installed according to plans, specifications, site requirements, manufacturer recommendations and standards, and ***sustainability principles and concepts***.
		3.4	Pipelines are flushed of air and foreign matter to installation standard.
		3.5	Backflow prevention device is installed according to standards.
		3.6	Water emitters are installed and adjusted to produce required spray pattern.
		3.7	Control valves are installed, operated and adjusted to achieve specified flow rate.
		3.8	Installation is tested to comply with standards and authorities' requirements, and is adjusted.
		3.9	Trenches are backfilled according to plans and specifications and ground surface is reinstated.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - compile list of materials
  - complete workplace documentation and record information
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to install pipework, controls, valves, backflow prevention devices and water emitters for an irrigation system and its commissioning
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- characteristics and application of different pipes and fittings, including fixing and joining techniques and methods
- job safety analysis (JSA) and safe work method statements (SWMS)
- process of setting out, installing and commissioning irrigation systems

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- processes for accessing information and for calculating material requirements
- properties of water, including pressure and flow rates
- protection of drinking water supplies
- relevant statutory and authority requirements related to installing and commissioning irrigation systems
- SI system of measurement
- standards applicable to the installation
- various types of irrigation systems, including types of materials and components used
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to set out, install and commission irrigation systems
- applying safety requirements throughout the work sequence, including applying equipotential bonding procedures and using personal protective clothing and equipment
- given the plans or specifications, determining the system requirements, setting out, installing and commissioning an irrigation system sourced from an isolating valve to supply four water emitters of varying type and requiring a solenoid valve, ensuring:
    - application of sustainability concepts and principles
    - correct identification of location, design and details of proposed installation
    - correct selection and use of appropriate processes, tools and equipment
    - completing all work to specification
    - compliance with regulations, standards and organisational quality procedures and processes
    - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

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Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning

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experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - dirt mounds
  - hazardous materials and substances
  - identifying and testing for electrical hazards
  - other machines
  - pits
  - poles
  - recently filled trenches

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- surrounding structure and facilities
- traffic control
- trees
- trip hazards
- underground services
- uneven and unstable terrain
- use of tools and equipment
- work site visitors and the public
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Quality assurance requirements may include:

- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.
-

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- chain blocks
- forklifts
- hand and power tools
- hand excavation equipment
- hand trolleys
- hoists and jacks
- ladders
- lifting and load shifting equipment
- mechanical excavation equipment
- rollers
- trench shoring equipment
- water flow and water test equipment.

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Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- maps
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to setting out, installing and commissioning irrigation systems
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Materials may include:

- copper tube, polyethylene, stainless steel and PVC-U pipes
- joints and components
- system components, including:
  - automatic controls
  - back flow prevention devices
  - low voltage solenoid valves
  - water emitters
- water emitters, which may include:
  - drip emitters
  - hear drive
  - impact
  - in-line turbo drippers
  - mist sprays
  - oscillating
  - pop up
  - pulsating
- selection of water emitters, based on:

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- automatic control systems
- manufacturer specifications
- physical site conditions
- site requirements
- sub-soil systems
- types of plants requiring irrigated water.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient use of material
  - minimising water wastage
  - considering usage of alternative water supply
  - protection of drinking water supply
  - selecting appropriate components and material to ensure minimal environmental impact.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPIG3022A Install and commission domestic irrigation pumps

Modification History

Prerequisite unit updated
Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPIG3012A

Unit Descriptor

This unit of competency specifies the outcomes required to install and commission domestic irrigation pumps.

Application of the Unit

Site location for work application is domestic, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Irrigation plans and specifications are obtained and site is inspected.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with installing and commissioning domestic irrigation pumps are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment*** for installing and commissioning domestic irrigation pumps, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient installation and commissioning of ***domestic irrigation pumps***.
2	Identify installation requirements.	2.1	Irrigation system requirements are identified from plans, specifications and relevant ***information***.
		2.2	Pump and installation ***materials*** are selected according to type, installation, range of flow rates, operating head and delivery distance.
		2.3	Pump is identified, ordered and collected according to workplace procedures.
		2.4	Pump is checked for compliance with standards, docket

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			and order form, and for acceptable condition.
3	Install and commission pump.	3.1	Pumpset out position is compliant with irrigation plans and manufacturer recommendations.
		3.2	Pump base is installed according to plans and specifications and ***sustainability principles and concepts***.
		3.3	Pump is positioned and fixed onto base.
		3.4	Suction and discharge lines are connected to pump according to manufacturer specifications.
		3.5	Piping is pressure tested according to job specifications.
		3.6	Operation of pump is tested and adjusted to achieve effective operation according to job and manufacturer specifications.
		3.7	Test data is recorded and documented in format required by quality assurance procedures.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - record and document test data
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to install and commission a centrifugal domestic irrigation pump
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- characteristics and application of different pipes and fittings, including:
  - fixing and joining techniques and methods
  - flow rates
- job safety analysis (JSA) and safe work method statements (SWMS)

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- levelling and alignment processes
- mechanical, hydraulic and electrical principles
- process of installing and commissioning domestic irrigation pumps
- processes for accessing information and for calculating material requirements
- properties of water, including pressure and flow rates
- relevant statutory and authority requirements related to installing and commissioning domestic irrigation pumps
- SI system of measurement
- various types of domestic irrigation pumps
- workplace and equipment safety requirements

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to install and commission domestic irrigation pumps
- applying safety requirements throughout the work sequence, including applying equipotential bonding procedures and using personal protective clothing and equipment
- given the plans and specifications for a domestic irrigation system, installing and commissioning for operation, a centrifugal pump (25mm suction and 25mm delivery), ensuring:
  - application of sustainability principles and concepts
  - correct identification of location, design and

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details of proposed installation
- correct selection and use of appropriate processes, tools and equipment
- completing all work to specification
- compliance with regulations, standards and organisational quality procedures and processes
- communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to

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confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be

- handling of materials

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according to commonwealth, state and territory legislation and regulations and may include:	• hazard control
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including recognising and preventing hazards associated with:
	  • identifying and testing for electrical hazards
	  • dirt mounds
	  • hazardous materials and substances
	  • other machines
	  • pits
	  • poles
	  • recently filled trenches
	  • surrounding structure and facilities
	  • traffic control
	  • trees
	  • trip hazards
	  • underground services
	  • uneven and unstable terrain
	  • use of tools and equipment
	  • work site visitors and the public
	  • working in proximity to others
	• use of firefighting equipment
	• use of first aid equipment
	• workplace environment and safety.

Environmental requirements cover water quality management and may include:	• clean-up protection • stormwater protection • waste management.
Quality assurance requirements may include:	• Environment Protection Authority (EPA) • internal company quality assurance policy and risk management strategy • International Standards Organisation • site safety plan • workplace operations and procedures.
Statutory and regulatory authorities include:	• commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

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Tools and equipment may include:

- concreting tools
- hand and power tools
- hand excavation equipment
- levelling equipment
- lifting and load shifting equipment, including:
  - chain blocks
  - forklifts
  - hand trolleys
  - hoists and jacks
  - rollers
- water flow and water pressure test equipment.

Domestic irrigation pumps may include:

- borehole and spear pumps
- horizontal and vertical shaft centrifugal pumps
- jet pumps
- other approved pumps.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- maps
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to installing and commissioning domestic irrigation pumps
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

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Materials may include:

- cement and sand
- copper tube, polyethylene, stainless steel and PVC-U pipes
- joints and components
- other approved materials.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient use of material
  - minimising water wastage
  - considering use of alternative water supply
  - protection of drinking water supply
  - selecting appropriate components and material to ensure minimal environmental impact.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPMS2021A Assemble mechanical services components

Modification History

Prerequisite unit updated
Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPMS2011A

Unit Descriptor

This unit of competency specifies the outcomes required to assemble mechanical services components for heating and cooling systems prior to their installation.

Application of the Unit

Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with assembly of mechanical services components are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient assembly of mechanical services components.
2	Identify fabrication requirements.	2.1	Fabrication requirements are identified from plans, specifications and relevant ***information***.
		2.2	Quantity and type of ***materials*** and ***components*** required are calculated from plans and specifications.
		2.3	Materials are identified, ordered and collected according to workplace procedures.
		2.4	Materials and equipment are checked for compliance with standards and docket and order form, and for acceptable condition with ***faults reported***.

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3	Assemble components.	3.1	Dimensions for fabrication and assembly are determined and transferred.
		3.2	Relevant standards, codes and symbols are interpreted.
		3.3	Selected development method is identified as appropriate and applied according to workplace procedures and ***sustainability principles and concepts***.
		3.4	Calculations are performed to determine job requirements.
		3.5	Material is marked out in conformance with determined measurements.
		3.6	Dimensions are checked for accuracy and compliance with plans and specifications.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to fabricate and assemble mechanical services components prior to installation in heating, cooling and ventilation systems
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- characteristics of materials used in the required assembly
- classification of assembly types and identification of assembly components
- job safety analysis (JSA) and safe work method statements (SWMS)

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- levelling and alignment processes
- mechanical and hydraulic principles
- personal protective equipment characteristics and use
- operation requirements of equipment used for fabricating and assembling components
- SI system of measurement
- types of fasteners, fixings and sealants
- WHS regulations relevant to assembly of irrigation components
- workplace operating procedures, including required standards for assembly

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to assemble mechanical services components
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, assembling and connecting a heating coil to a boiler and a fan and duct work for a warm air heating system, ensuring:
  - application of sustainability principles and concepts
  - correct identification of requirements and details of assembly
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or

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Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken

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at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - hazardous materials and substances
  - identifying and testing for electrical hazards
  - service lines
  - surrounding structures and facilities
  - traffic control
  - trip hazards
  - use of tools and equipment
  - work site visitors and the public
  - working in proximity to others
- use of firefighting equipment

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- use of first aid equipment
- workplace environment and safety.

Environmental requirements may include:

- clean-up protection
- waste management.

Quality assurance requirements may include:

- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- hand and power tools
- heating, cutting and bending equipment
- lifting and load shifting equipment, including:
  - chain blocks
  - elevated work platforms
  - forklifts
  - hand trolleys
  - hoists and jacks
  - restricted height scaffolds
  - rollers
- welding equipment.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes

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- WHS and environmental requirements
- plumbing regulations
- relevant Australian standards
- safe work procedures relating to the assembly of mechanical services components
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Materials may include:

- components of steel, copper, brass, polymer materials or other approved materials
- insulating materials for piping and ducting
- metal piping
- sheet metal.

Components may include:

- boilers
- chillers
- duct work
- fired and unfired pressure vessels
- heat exchangers and condensers
- pipework
- structural sections.

Fault reporting:

- may be written or verbal
- is to be according to company's workplace procedures.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient use of material
  - correct handling of hazardous materials
  - appropriate recycling of material
  - selecting appropriate components to ensure minimal environmental impact.

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Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPMS3031A Fabricate and install steel pressure piping

Modification History

Prerequisite unit changed
Changes to performance criteria, required skills and knowledge, range statement
Not equivalent to CPCPMS3011A

Unit Descriptor

This unit of competency specifies the outcomes required to determine installation requirements and to fabricate, install and test steel pressure piping.
It applies to pipe systems with operating pressures not exceeding 1750kPa and 200°C.

Application of the Unit

Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans, specifications and any special instructions are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with fabricating and installing steel pressure piping are adhered to throughout the work.
		1.3	***Quality assurance requirements*** for company operations are identified and adhered to.
		1.4	Work is planned in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment*** are identified, selected and checked for serviceability.
		1.6	Work area and materials are prepared to support efficient fabrication and installation of steel pressure piping.
2	Identify installation requirements	2.1	Pipework configuration is identified from authorities' requirements, plans, specifications and relevant ***information***.
		2.2	Allowances for fabrication and/or assembly are determined and transferred.
		2.3	Quantity and type of ***materials*** required are calculated from plans and specifications according to regulatory authorities' and workplace requirements.
		2.4	Materials are identified, ordered and collected according

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			to workplace procedures.
		2.5	Materials are checked for compliance with docket and order form and for acceptable condition, and ***faults are reported***.
3	Fabricate, install and test pipe system.	3.1	System is set out in compliance with design drawings or instructions.
		3.2	Fixings and supports are installed to manufacturer requirements, job plans, specifications and workplace requirements.
		3.3	***Pipe*** system is fabricated and jointed according to job plans, specifications and manufacturer requirements for mechanical type joints.
		3.4	Pipe system is installed in specified location without damage or distortion to pipework or surrounding environment or other services.
		3.5	***Sustainability principles and concepts*** are applied throughout the installation process.
		3.6	Pipe system is tested and documented to comply with job specification, authorities' requirements, relevant Australian standards, codes of practice and workplace requirements.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - document pipes system test
- read and interpret:
  - documentation from a variety of sources
  - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
  - cut and weld with oxy-acetylene and arc welding
  - mechanical bend, joint, fix and test mild steel pressure piping systems
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- fabrication, installation and testing process for pressure pipe systems
- job safety analysis (JSA) and safe work method statements (SWMS)

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- processes for accessing information and for calculating material requirements
- properties of conveyed materials, including pressure, flow rates and temperature requirements
- relevant statutory authorities' requirements and Australian standards related to fabricating, installing and testing pressure pipe systems
- SI system of measurements
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, relevant Australian standards and specifications to determine requirements, and fabricate, install and test pressure pipe systems
- applying safety requirements throughout the work sequence, including applying equipotential bonding procedures and the use of personal protective clothing and equipment
- given the plans and specifications, applying pipe cutting and welding skills by using oxy-acetylene and arc welding equipment for piping up to DN50 to include:
  - butt welding a pipe joint in DN40 piping in the fixed horizontal position
  - welding DN40 and 50 mild steel branch joints
  - constructing a DN80 header with DN20, 40 and 50 branch joints using the oxy-acetylene method
  - welding 50mm and 80mm flanges to mild steel pipe
  - welding blank ends into DN80 mild steel pipe
- fabricating, installing and testing a DN40 steel pipeline from a flanged header to mechanical plant, incorporating two changes of direction with one position butt welded with oxy welding, plus an arc welded flange incorporating a branch for testing purposes
- completed task is to be tested to the required pressure, and the soundness of all joints and the system, ensuring:
  - application of sustainability principles and

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concepts throughout the installation
  - correct diameters are used, system is manufactured to required dimensions, and branches, bends, flanges, etc. are square
  - correct identification of design and details of proposed pressure pipe system
  - correct selection and use of appropriate processes, tools and equipment
  - completion of all work to specification
  - compliance with regulations, relevant Australian standards and organisational quality procedures and processes
- communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

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Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

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The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances
  - identifying and testing for electrical hazards
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of tools, plant and equipment
  - work site visitors and the public
  - working at heights
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements may include:

- clean-up protection
- ozone protection
- waste management.

Quality assurance requirements may include:

- environment policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities

- commonwealth, state or territory, and local authorities administering applicable Acts,

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include:

regulations and codes of practice.

Tools and equipment may include:

- hand and power tools
- mechanical bending equipment and threading equipment
- ladders
- lifting and load shifting equipment, including:
  - chain blocks
  - elevated work platforms
  - forklifts
  - hand trolleys
  - hoists and jacks
  - rollers
  - scaffolding
- oxy and arc welding equipment
- testing equipment.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to fabricating, installing and testing pressure pipe systems
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Materials for fabricating, installing and testing pressure pipe systems

- cutting and welding gases
- mechanical joint systems and fittings with variable

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may include:

diameters up to DN100
- steel pipes
- threaded pipe fittings
- weldable pipe fittings.

Fault reporting:

- may be written or verbal
- is to be according to company's workplace procedures.

Pipes may convey:

- compressed air refrigerants and low temperature applications, including chilled water and refrigerated gases
- condensate
- fuel oil
- water and other liquids.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient energy and water use
  - efficient use and recycling of material
  - correct handling of hazardous materials
  - disposing of waste material to ensure minimal environmental impact
  - selecting appropriate components to ensure minimal environmental impact.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPMS3032A Select and fit insulation and sheathing

Modification History

Prerequisite unit updated
Changes to performance criteria, required skills, range statement and critical aspects
Not equivalent to CPCPMS3012A

Unit Descriptor

This unit of competency specifies the outcomes required to install insulating sheathing on hot and cold piping, fittings and vessels. It includes the selection of insulation materials.

Application of the Unit

Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with selecting and installing insulating sheathing are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient selection and installation of insulating sheathing.
2	Identify insulation requirements.	2.1	***Insulation materials*** are selected that comply with plans, specifications and relevant ***information***.
		2.2	Quantity and type of materials required are calculated from plans and specifications.
		2.3	Allowances for fabrication and assembly are determined.
		2.4	Materials are identified, ordered and collected according to workplace procedures.
		2.5	Materials are checked for compliance with docket and order form and for acceptable condition, and ***faults are reported***.
3	Install insulation.	3.1	Surfaces to be insulated are cleaned of dirt, rust, scale and grease.
		3.2	Insulating materials, including ***sheathing***, are installed according to plans and specifications.
		3.3	***Vapour barriers*** are applied to suit job requirements.
		3.4	***Sustainability principles and concepts*** are applied

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			throughout the installation.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- technical skills to select and install appropriate thermal insulation sheathing to sections of both hot and cold piping, fittings and vessels associated with refrigeration and cooling and heating systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- correct waste disposal and recycling processes
- job safety analysis (JSA) and safe work method statements (SWMS)
- levelling and alignment processes

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- materials handling processes
- WHS regulations relevant to insulation and sheathing
- personal protective equipment requirements and use
- processes of selecting and insulating pipes, fittings and vessels
- SI system of measurement
- techniques for cutting, fabricating and assembling metal sheathing
- techniques for fixing insulating materials to piping and vessels

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to select and install insulating sheathing to piping, fittings and vessels
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, insulating 2 metres of small bore heating line with at least one change in direction; 2 metres of refrigeration line with at least one change in direction, and metal sheath at least 2 metres of pipework with at least one change in direction, ensuring:
    - application of sustainability principles and concepts
    - correct identification of requirements and details of proposed installations
    - correct selection and use of appropriate processes, tools and equipment
    - completing all work to specification
    - compliance with regulations, standards and organisational quality procedures and processes
    - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and

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environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace

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- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - hazardous materials and substances
  - identifying and testing for electrical hazards
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of tools and equipment

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- work site visitors and the public
- working at heights
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements may include:

- clean-up protection
- waste management.

Quality assurance requirements may include:

- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- dust masks and respirators
- fall protection equipment
- hand and power tools
- ladders
- lifting and load shifting equipment, including:
  - chain blocks
  - elevated work platforms
  - forklifts
  - hand trolleys
  - hoists and jacks
  - restricted height scaffolds
  - rollers
- measuring equipment
- swaging machines
- pittsburgh lock forming machine
- sheet metal rollers
- spot welder.

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Insulation materials may be:

- chemically blown PVC nitrile rubber sponge in tubular or sheet form
- closed cell
- flexible
- hydrous calcium silicate with fibrous reinforcement in preformed sections
- polyisocyanurate (PIR) foam in preformed sections
- powder form and jute fibre in strip form
- resin-bonded glass fibre in flexible blanket or preformed sections
- resin-bonded mineral wool in flexible blanket form
- rigid polyurethane foam in preformed sections
- other approved materials.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to selecting and installing insulating sheathing to hot and cold piping, fittings and vessels
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Fault reporting:

- may be written or verbal
- is to be according to company's workplace procedures.

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Sheathing may include:

- aluminium
- aluminium and zinc coated steel
- stainless steel
- zinc coated steel
- other approved materials.

Vapour barriers may include:

- mastic or plastic type filling compounds and adhesives
- reinforced aluminium foil and polyethylene tubular jacket.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient use of material
  - efficient energy retention
  - selecting appropriate products, components and material to ensure minimal environmental impact.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPMS3033A Install small bore heating systems

Modification History

Prerequisite unit updated
Minor changes to unit
Not equivalent to CPCPMS3013A

Unit Descriptor

This unit of competency specifies the outcomes required to install small bore hydronic heated water heating systems.

Application of the Unit

Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with installing small bore heating systems are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient installation of small bore heating systems.
2	Identify system requirements.	2.1	Configuration of pipework is checked for compliance with plans, specifications, authorities' requirements and other relevant ***information***.
		2.2	Position of pipes and heating units is determined from plans, specifications or site requirements, so as not to cause damage or interference to surrounding structures.
		2.3	Allowances for fabrication or assembly are determined and transferred.
		2.4	Quantity and type of ***piping materials*** and other ***materials*** required are calculated from plans and specifications.

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		2.5	Materials are identified, ordered and collected according to workplace procedures.
		2.6	Materials and equipment are checked for compliance with docket and order form and for acceptable condition, and ***faults are reported***.
3	Fabricate, install and commission heating system.	3.1	System is set out to comply with plans and specifications.
		3.2	Fixings and supports are installed to manufacturer recommendations, and plans and specifications.
		3.3	Pipe system is installed and jointed in compliance with plans, specifications and manufacturer requirements for mechanical type joints.
		3.4	***Heating system*** unit is installed according to plans, specifications and manufacturer requirements.
		3.5	Heating system is installed in specified location without damage or distortion to pipework, surrounding environment or other services.
		3.6	***Sustainability principles and concepts*** are applied throughout the installation process.
		3.7	Heating system is tested to comply with job specification, regulatory authorities' requirements, and relevant Australian standards and codes of practice; and details are recorded in required format.
		3.8	Heating system is checked and adjusted for correct operation and balance, including the setting of nominated temperature and adding appropriate inhibitor.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - document heating system test
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
  - determine system requirements
  - install and commission a heating system
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- characteristics and application of different fixing and joining techniques and methods
- effective isolation processes and procedures

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- electrical and electronic principles and safety requirements
- job safety analysis (JSA) and safe work method statements (SWMS)
- WHS regulations relevant to installation of small bore systems
- personal protective equipment requirements and use
- processes of installing and commissioning small bore heating systems
- properties of water, including pressure and flow rates
- SI system of measurement
- statutory requirements

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, relevant Australian standards and specifications to install and commission small bore heating systems
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications and using a combination of copper tube and non-metallic piping, installing a two-pipe heating system to either a panel radiator, skirting convector or a unit heater; the installation should have a minimum of DN20 flow and return with DN15 branches, connected to a boiler and heat exchanger and heating source, ensuring:

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- application of sustainability principles and concepts throughout the installation
- correct identification of requirements and details of proposed installation
- correct selection and use of appropriate processes, tools and equipment
- completion of all work to specification
- compliance with regulations, relevant Australian standards and organisational quality procedures and processes
- communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the

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Construction, Plumbing and Services Training Package

- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate,

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accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:	• handling of materials
	• hazard control
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including recognising and preventing hazards associated with:
	  • electricity
	  • hazardous materials and substances
	  • identifying and testing for electrical hazards
	  • service lines
	  • surrounding structures and facilities
	  • trip hazards
	  • use of tools and equipment
	  • work site visitors and the public
	  • working at heights
	  • working in proximity to others
	• use of firefighting equipment
	• use of first aid equipment
	• workplace environment and safety.

Environmental requirements are to cover:	• clean-up protection • ozone protection • waste management.
Quality assurance requirements may include:	• Australian standards • environment policy • Environment Protection Authority (EPA) • internal company quality assurance policy and risk management strategy • International Standards Organisation • site safety plan • workplace operations and procedures.
Statutory and regulatory authorities include:	• commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

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Tools and equipment may include:

- hand and power tools
- heating and bending equipment
- ladders
- lifting and load shifting equipment, including:
  - chain blocks
  - elevated work platforms
  - forklifts
  - hand trolleys
  - hoists and jacks
  - rollers
  - scaffolding
- measuring equipment
- silver brazing equipment
- welding equipment.

Information may include:

- charts and hand drawings
- diagrams and sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to installing small bore heaters
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Piping materials may include:

- copper (Cu)
- polybutylene (PB)
- polyethylene (PP)
- steel pipes

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- other approved materials.

Materials may include:

- fixings and supports
- heaters (panel, skirting and unit)
- pipe materials
- other approved materials.

Fault reporting:

- may be written or verbal
- is to be according to company's workplace procedures.

Heating system may include:

- panel radiators
- skirting convectors
- unit heaters.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient energy and water use
  - efficient use and recycling of material
  - correct handling of hazardous materials
  - disposing of waste material to ensure minimal environmental impact
  - selecting appropriate components to ensure minimal environmental impact.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPMS3034A Install medical gas pipeline systems

Modification History

Prerequisite unit updated
Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPMS3014A

Unit Descriptor

This unit of competency specifies the outcomes required to install and test medical gas pipeline systems.

Application of the Unit

Site location for work application is commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications are obtained and work requirements are identified.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with installation of medical gas pipeline system are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient installation of medical gas pipeline systems.
2	Identify system requirements.	2.1	Configuration of system is checked for compliance with plans, specifications, standards, authorities' requirements and relevant ***information***.
		2.2	Position of pipes, supports, fixings and terminals are determined from plans and specifications or site requirements, so as not to cause damage or interference to surrounding structures.
		2.3	Allowances for fabrication or assembly are determined and transferred.
		2.4	Quantity and type of ***materials***, including ***types of***

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			medical gas pipelines required, are calculated from plans and specifications.
		2.5	Materials are identified, ordered and collected according to workplace procedures.
		2.6	Materials and equipment are checked for compliance with standards, docket and order form, and for acceptable condition and ***faults are reported***.
3	Fabricate, install, purge and test pipeline system.	3.1	***Medical gas pipeline system*** is set out to comply with plans, specifications, standards and authorities' requirements.
		3.2	Fixings and supports are installed to comply with plans, specifications, standards, authorities' requirements and manufacturer recommendations.
		3.3	Pipe system and terminal units are positioned and labelled in compliance with plans, specifications, standards and manufacturer requirements.
		3.4	Pipeline system is installed in specified location without damage or distortion to pipework, surrounding environment or other services.
		3.5	Pipeline system is pressure tested to comply with job specification, regulatory authorities' requirements, standards and regulations, and details are recorded in required format.
		3.6	Pipeline system is purged according to standards and authorities' requirements.
		3.7	***Sustainability principles and concepts*** are applied throughout the installation.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	Documentation is completed according to workplace

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requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - document pipeline system pressure test
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work

teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities

- technical skills to:
  - determine system requirements
  - install, test and purge a medical gas pipeline system
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- job safety analysis (JSA) and safe work method statements (SWMS)

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- WHS regulations relevant to medical gas pipeline systems
- personal protective equipment requirements and use
- pressure testing procedures and equipment
- processes and requirements of installing, testing and purging medical gas pipeline systems
- SI system of measurement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to install medical gas pipeline systems
- applying safety requirements throughout the work sequence, including equipotential bonding procedures and the use of personal protective clothing and equipment
- given the plans and specifications, installing and testing at least three medical gas pipeline systems (each with a different medical gas) from a manifold system to terminal units and fittings, ensuring:
  - application of sustainability principles and concepts
  - cleanliness and sterility of finished system
  - correct identification of requirements and details of proposed installation
  - correct selection and use of appropriate processes, tools and equipment
  - completion of all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will

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usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a

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number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - hazardous materials and substances
  - identifying and testing for electrical hazards
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of tools and equipment
  - work site visitors and the public
  - working at heights
  - working in proximity to others

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- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements may include:

- clean-up protection
- ozone protection
- waste management.

Quality assurance requirements may include:

- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- hand and power tools
- heating and bending equipment
- silver brazing equipment.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to installing medical gas pipeline systems

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	• signage • verbal, written and graphical instructions • work bulletins • work schedules, plans and specifications.
Materials for installing medical gas pipeline systems are to include:	• fittings and supports • labels • pipe materials • purging gases • terminal units.
Types of medical gas pipelines may include:	• carbon dioxide • medical breathing air • medical suction • mixtures of medical gases • nitrous oxide • standard oxygen • surgical tool gas.
Fault reporting:	• may be written or verbal • is to be according to company's workplace procedures.
Medical gas pipeline system includes:	• fixtures and labels • gas pipeline • terminal units and fittings.

Sustainability principles and concepts:	• cover the current and future social, economic and environmental use of resources
	• may include:
	  • efficient use of material
	  • efficient energy retention
	  • selecting appropriate products and components to ensure minimal environmental impact.

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Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPMS3035A Install and test ducting systems

Modification History

Prerequisite unit changed
Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPMS3015A

Unit Descriptor

This unit of competency specifies the outcomes required to install and test ducting systems used for ventilation systems, heating and/or cooling systems, and exhaust systems.

Application of the Unit

Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** installing and testing ducting systems are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient installation and testing of ducting systems.
2	Identify system requirements.	2.1	Quantity and type of ***ducting system materials***, including in-duct equipment, are calculated from plans, specifications and relevant ***information***.
		2.2	Allowances for fabrication or assembly are determined and transferred.
		2.3	***Materials*** are identified, ordered and collected according to workplace procedures.
		2.4	Materials and equipment are checked for compliance with standards, docket and order form, and acceptable condition and ***faults are reported***.

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3	Install and insulate duct system.	3.1	System is set out to comply with plans and specifications.
		3.2	Duct supports and fixings are positioned to comply with plans, specifications and manufacturer recommendations.
		3.3	Duct work is installed according to plans and specifications.
		3.4	Circumferential joints are assembled and sealed according to plans, specifications and manufacturer recommendations.
		3.5	Duct system is installed in specified location, without damage or distortion to surrounding environment or other services and according to standards.
		3.6	Insulation materials are fixed according to plans and specifications.
		3.7	Insulation materials are installed in specified location without damage to surrounding environment and according to plans, specifications, standards and manufacturer recommendations.
		3.8	***Diffusers and terminal devices*** are installed according to plans and specifications and with no damage to ceiling or finished surfaces.
		3.9	***Sustainability principles and concepts*** are applied throughout the installation.
4	Test duct work system.	4.1	Test requirements are determined from plans and specifications.
		4.2	Appropriate test equipment is selected for specified tests.
		4.3	Duct system is tested under pressure according to instructions and workplace procedures.
		4.4	Leak sources are identified and repaired using specified procedures and materials, to ensure correct flow operation.
		4.5	Details of test data are recorded in format required by

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			the specification.
5	Clean up.	5.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		5.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		5.3	Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - document ducting system tests
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to install, insulate and test ducting for ventilation, heating, cooling and exhaust systems, including in-duct equipment
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- applicable Australian standards
- application of flow rates, pressure and volume principles to testing procedures

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- characteristics of materials used in the system being tested
- electrical and electronic principles and safety requirements
- job safety analysis (JSA) and safe work method statements (SWMS)
- levelling and alignment processes
- WHS regulations relevant to the work activity
- personal protective equipment requirements and use
- processes of installing, insulating and testing ducting
- SI system of measurement
- statutory requirements
- system types and identification of system components
- techniques for setting out, assembling, fixing and jointing duct work systems and components, including insulation and acoustic materials
- types of repairs for detected leaks in the duct work system

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to install and test small ducting systems
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, installing, insulating, testing and balancing from a plenum box or chamber a supply of heated air to three outlet grills; the installation shall incorporate hard and flexible duct work, including one transition piece and dampeners, ensuring:
    - application of sustainability principles and concepts
    - correct identification of requirements and details of proposed installation
    - correct selection and use of appropriate processes, tools and equipment
    - completing all work to specification
    - compliance with regulations, standards and organisational quality procedures and processes
    - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

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Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning

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experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - hazardous materials and substances
  - identifying and testing for electrical hazards
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of tools and equipment
  - work site visitors and the public

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- working at heights
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements may include:

- clean-up protection
- waste management.

Quality assurance requirements may include:

- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- duct lifter
- hand and power tools
- in-duct equipment, including:
  - fire dampers
  - noise attenuation fittings
  - volume control dampers
- ladders
- lifting and load shifting equipment, including:
  - chain blocks
  - elevated work platforms
  - forklifts
  - hand trolleys
  - hoists and jacks
  - rollers
  - scaffolds
- measuring equipment
- pittsburgh lock forming machine
- sheet metal rollers
- spot welders

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- test equipment, including:
  - manometers
  - micro-manometers.

Ducting system materials:

- may include:
  - diffusers
  - ducting
  - fixings and supports
  - in-duct equipment
  - insulation
  - joints
  - plenum box and chamber
  - terminal devices
- may be:
  - flexible
  - sheet metal
  - a combination.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to installing and testing ducting heaters
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

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Materials:

- may include:
- ducting:
  - fixings and supports
  - sheet metal:
    - flexible
    - combination
  - in-duct fittings:
    - plastic
    - sheet metal
  - insulation
- insulation and acoustic materials may be:
  - acoustic and non-acoustic materials
  - externally insulated
  - fibreglass tissue factory bonded to the insulation
  - flexible aluminium laminate fabric
  - perforated double-sided aluminium foil factory bonded to the insulation
  - perforated zincanneal or other metal sheet fixed in the duct so that continuous insulation is obtained
  - resin-bonded mineral wool or glass fibre in faced or unfaced semi-rigid batt or board form, weight 20 to 100kg and m^3
  - sheet materials
  - surface facings of PVC-coated fibreglass mesh factory bonded to the insulation
  - thermal and acoustic insulation for duct work and air handling equipment, handling air between 2 and 65°C
  - thermal insulation and sound absorption materials of resin-bonded mineral wool or glass fibre in unbound flexible blanket form, weight 20 to 65 kg and m^3.

Fault reporting:

- may be written or verbal
- is to be according to company's workplace procedures.

Diffusers and terminal devices may include:

- combined diffusers
- control devices
- cushion heads

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- grills
- light fittings
- outlets taken directly from duct and on flexible branch
- pressure-reducing devices
- registers
- variable air volume (VAV) boxes.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient use and recycling of material
  - efficient energy retention
  - ensuring integrity of ductwork system
  - selecting appropriate products and components to ensure minimal environmental impact.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPMS3036A Install air handling units

Modification History

Prerequisite unit updated
Changes to descriptor, performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPMS3016A

Unit Descriptor

This unit of competency specifies the outcomes required to install and test air heating, cooling and ventilation plenums or enclosures.

Application of the Unit

Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** installing and testing air handling units are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient installation and testing of air handling units.
2	Identify installation requirements.	2.1	Requirements for components and materials are determined from plans, specifications and relevant ***information***.
		2.2	Assembly methods are identified from plans and specifications.
		2.3	***Materials and components*** are identified, ordered and collected according to workplace procedures.
		2.4	Materials and equipment are checked for compliance with standards, docket and order form, and for acceptable condition; and ***faults are reported***.

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3	Set out, assemble and test air handling units.	3.1	***Air handling unit*** is set out in compliance with plans and specifications.
		3.2	Components and equipment are positioned according to plans and specifications.
		3.3	Equipment is installed according to job and manufacturer specifications.
		3.4	Assembly is checked for compliance with plans and specifications.
		3.5	Air handling unit is tested for correct operation.
		3.6	Details of test data are recorded in required format.
		3.7	***Sustainability principles and concepts*** are applied throughout the installation process.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - document pipeline system pressure test
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to install and test an air handling plenum, which is part of an air heating, cooling and ventilation system
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- effect of machinery vibrations on structures, ducts and fittings
- electrical and safety requirements
- equipment installation techniques that limit the transfer of vibrations from plant and

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equipment to other components
- job safety analysis (JSA) and safe work method statements (SWMS)
- WHS regulations relevant to the work activity
- personal protective equipment requirements and use
- processes of installing and testing air handling units
- SI system of measurement
- statutory requirements
- techniques for setting out, assembly and fixing and jointing requirements for duct work systems
- testing, balancing and commissioning of air handling units

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to install air handling units
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, installing a plenum chamber that includes a fan, coil, filter and dampers, including supports and brackets and any fixing requirements, allowing for anti-vibration and ensuring:
  - application of sustainability principles and concepts
  - correct identification of requirements and details of proposed installation
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will

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usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a

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number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of tools and equipment
  - work site visitors and the public
  - working at heights

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- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements may include:

- clean-up protection
- waste management.

Quality assurance requirements may include:

- Australian standards
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- hand and power tools
- ladders
- lifting and load shifting equipment, including:
  - chain blocks
  - elevated work platforms
  - forklifts
  - hand trolleys
  - hoists and jacks
  - rollers
  - scaffolds
  - duct lifter
- measuring equipment.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos

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- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to installing and testing air handling units
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Materials and components may include:

- coils
- fans
- filters
- motors
- sheet metal:
  - galvanised iron
  - zincalume
  - other approved metals.

Fault reporting:

- may be written or verbal
- is to be according to company's workplace procedures.

Air handling units may contain:

- coils
- fans
- filters
- other equipment items.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient use of material
  - efficient energy retention
  - selecting appropriate products and components

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to ensure minimal environmental impact.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPMS3037A Install and test split system air conditioning

Modification History

Prerequisite unit changed
Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPMS3017A

Unit Descriptor

This unit of competency specifies the outcomes required to install and test split system air conditioning.

Application of the Unit

Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** installing split air conditioning are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient installation of split air conditioning.
2	Identify installation requirements.	2.1	Quantity and type of material required for installation are determined from plans, specifications and relevant ***information***.
		2.2	***Materials*** are identified, ordered and collected according to workplace procedures.
		2.3	Requirements for other services are identified and connection is planned according to regulatory requirements.
		2.4	Materials and equipment are checked for compliance with standards, docket and order form, and for acceptable condition and ***faults are reported***.

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3	Install and test system.	3.1	Installation is set out in compliance with plans and specifications.
		3.2	Existing services are located and installation process is adjusted accordingly to avoid any disturbance.
		3.3	Preparatory work is carried out to specifications without unnecessary damage to surrounding structures or environment.
		3.4	Structural supports are installed in compliance with plans and specifications.
		3.5	Ducting and control panels are installed according to authorities' requirements, manufacturer recommendations, plans and specifications.
		3.6	System is installed to manufacturer recommendations, plans and specifications.
		3.7	***Sustainability principles and concepts*** are applied throughout the installation.
		3.8	Installation is tested according to specifications, codes or standards for the application.
		3.9	Test results are documented in required format.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- literacy skills to:
  - complete workplace documentation
  - document pipeline system pressure test
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology
  - undertake preparatory work that may be needed, including penetration through building structure, installation of structural supports and installation of plinths

Required knowledge

- characteristics and application of different assemblies, including fixing and jointing techniques and methods

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- effective isolation processes and procedures
- electrical safety requirements
- environmental impact of gases and Environment Protection Authority (EPA) requirements
- job safety analysis (JSA) and safe work method statements (SWMS)
- materials handling techniques
- WHS regulations relevant to the work activity
- personal protective equipment requirements and use
- operating principles of air conditioning and refrigeration systems
- processes of installing and testing split air conditioning systems
- SI system of measurement
- statutory requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to install split air conditioning
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, installing and pressure testing a single-head split system air conditioner, ensuring:
  - application of sustainability principles and concepts
  - correct identification of requirements and details of proposed installation
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or

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Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken

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at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - hazardous materials and substances
  - identifying electrical safety requirements
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of tools and equipment
  - work site visitors and the public
  - working at heights
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment

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- workplace environment and safety.

Environmental requirements may include:

- clean-up protection
- ozone protection
- waste management.

Quality assurance requirements may include:

- EPA
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- hand and power tools
- ladders
- lifting and load shifting equipment, including:
  - chain blocks
  - elevated work platforms
  - forklifts
  - hand trolleys
  - hoists and jacks
  - rollers
  - scaffolds
- measuring equipment:
  - vacuum pump
- testing equipment, including relevant pressure-testing equipment.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements

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- plans, sketches and graphics
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to installing split air conditioning
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Materials may include:

- air conditioning unit
- control panels
- ducting materials
- insulation.

Fault reporting:

- may be written or verbal
- is to be according to company's workplace procedures.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient use of material
  - efficient energy retention
  - handling refrigerant gas according to appropriate commonwealth authorities' requirements
  - selecting appropriate products and components to ensure minimal environmental impact.

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Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPMS3038A Install air conditioning control equipment

Modification History

Prerequisite unit changed
Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPMS3018A

Unit Descriptor

This unit of competency specifies the outcomes required to install air conditioning control equipment for the control of pressure, temperature, flow rate, humidity and density.

Application of the Unit

Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** installing air conditioning control equipment are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient installation of ***air conditioning control equipment***.
2	Identify installation requirements.	2.1	Appropriate controller and necessary ***materials*** are selected according to plans and specifications, manufacturer recommendations and relevant ***information***.
		2.2	Controller position is identified from plans and specifications, and with consideration of location of existing services.

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3	Install control equipment.	3.1	***Air conditioning*** system is shut down and isolated according to appropriate codes of practice and WHS requirements.
		3.2	Control equipment is installed to specification or manufacturer instructions and ***faults are reported***.
		3.3	***Sustainability principles and concepts*** are applied throughout the installation.
		3.4	Control equipment is positioned in specified location without damage or distortion to surrounding environment or other services.
		3.5	Manual-handling techniques are used according to WHS requirements.
4	Calibrate and test control equipment.	4.1	Control equipment is calibrated according to manufacturer recommendations and job specifications.
		4.2	Correct operation of system control equipment is checked against operational specification.
5	Clean up.	5.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		5.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		5.3	Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- effective isolation processes and procedures
- electrical and safety requirements
- job safety analysis (JSA) and safe work method statements (SWMS)
- WHS regulations relevant to the work activity
- personal protective equipment requirements and use

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- operating principles of air conditioning and refrigeration systems
- power and maintenance access requirements for control units
- process of installing and testing air conditioning control equipment
- SI system of measurement
- statutory requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to install air conditioning control equipment
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, installing a control valve, a thermostat and flow, pressure and limit switches for an air conditioning system, ensuring:
  - application of sustainability principles and concepts
  - correct identification of requirements and details of proposed installation and location
  - correct operation of the system and equipment
  - correct selection and use of appropriate processes, tools and handling of equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will

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usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a

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number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - hazardous materials and substances
  - identifying and testing for electrical hazards
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of tools and equipment
  - work site visitors and the public
  - working at heights
  - working in proximity to others

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- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements may include:

- clean-up protection
- waste management.

Quality assurance requirements may include:

- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- hand and power tools
- ladders
- lifting and load shifting equipment, including:
  - chain blocks
  - elevated work platforms
  - forklifts
  - hand trolleys
  - hoists and jacks
  - rollers
  - scaffolds
- measuring equipment
- test equipment, including:
  - multi-meters
  - pressure gauges
  - thermometers
  - anemometer
  - differential pressure gauges.

Air conditioning control equipment may include:

- control switches
- control valves

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- damper motors
- flow switches
- limit switches
- pressure switches
- solenoid valves
- thermostats.

Materials may include:

- air conditioning controls for installation.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to installing air conditioning control equipment
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Air conditioning may be:

- electric
- hydraulic
- pneumatic
- self-contained
- a combination.

Fault reporting:

- may be written or verbal
- is to be according to company's workplace procedures.

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Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - appropriate recycling of material
  - correct handling of hazardous materials
  - efficient use of material
  - selecting appropriate products and components to ensure minimal environmental impact.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPMS3039A Maintain mechanical services equipment

Modification History

Prerequisite unit changed
Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPMS3019A.

Unit Descriptor

This unit of competency specifies the outcomes required to perform general maintenance of heating, ventilating and air conditioning systems and associated mechanical equipment (air distribution systems, hydronic systems and control systems).

Application of the Unit

Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** maintaining mechanical services equipment are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient maintenance of mechanical services equipment.
2	Perform routine maintenance.	2.1	Maintenance tasks detailed in ***routine maintenance*** schedule are carried out to specification and in line with relevant ***information***.
		2.2	Mechanical equipment and system components are checked with appropriate instruments.
		2.3	Faulty items or components are identified, ***faults reported*** and maintenance procedure selected.

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3	Repair and replace faulty components and test job.	3.1	Equipment is safely isolated according to regulations and WHS requirements.
		3.2	Faulty items or components are removed using appropriate tools, equipment and procedures.
		3.3	Replaceable items are selected from manufacturers' catalogue or serviceable items are fitted according to manufacturer or site specifications.
		3.4	***System adjustments*** are made to equipment or components to comply with specifications.
		3.5	Operational check is carried out on system to ensure its compliance with job specification.
		3.6	Maintenance report is documented in format required by the maintenance specification.
		3.7	***Sustainability principles and concepts*** are applied throughout the repair, replacement and testing procedures.
4	Clean up.	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- literacy skills to:
  - complete workplace documentation
  - document maintenance report
  - read and interpret:
    - documentation from a variety of sources
    - maintenance schedule
    - manufacturer catalogues
    - plans, specifications and drawings
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
  - conduct routine maintenance on air distribution and hydronic heating, ventilating and air conditioning systems
  - identify and accurately report to appropriate personnel any faults in tools, equipment or materials

technology skills to:

- access and understand site-specific instructions in a variety of media
- use mobile communication technology

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Required knowledge

- air-conditioning and refrigeration principles
- electrical safety principles
- effect of bacteria in water, and potential impact on health
- job safety analysis (JSA) and safe work method statements (SWMS)
- mechanical and hydraulic principles
- personal protective equipment requirements and use
- operating principles of system components used in mechanical services equipment
- processes of maintaining mechanical services equipment
- SI system of measurement
- WHS regulations relevant to the work activity
- workplace and statutory requirements for mechanical services equipment

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to maintain mechanical services equipment
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- for air distribution equipment, given the plans and specifications, replacing, realigning and tensioning pullies and belts; check vibration mountings and flexible connections; lubricate bearings; clean air filters, coils and blades; and check system for leaks
- for hydronic systems, given the plans and specifications, replacing gland valves and O rings, replacing and adjusting pump glands, cleaning drains, adjusting operating control valves and settings, replacing chemical dosing systems when required and checking water system for leaks
- for both air distribution and hydronic systems, ensuring:
    - application of sustainability principles and concepts
    - correct identification of requirements and details of proposed maintenance
    - correct selection and use of appropriate processes, tools and equipment
    - completing all work to specification
    - compliance with regulations, standards and organisational quality procedures and processes
    - communicating and working effectively and

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safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and

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environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - hazardous materials and substances

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- identifying and testing for electrical hazards
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of tools and equipment
  - work site visitors and the public
  - working at heights
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements may include:

- clean-up protection
- potential health hazards
- waste management.

Quality assurance requirements may include:

- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- health warnings
- International Standards Organisation
- site safety plan
- water treatment requirements
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- elevated work platforms
- hand and power tools
- ladders
- scaffolds
- test equipment
- tachometer.

Routine maintenance may include:

- aligning drives
- checking vibration isolation
- cleaning filters and strainers (air and water systems)

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- cleaning equipment drains
- cleaning finned coils
- lubricating bearings
- V belt tensioning.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- program maintenance schedules, plans and specifications
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - confined space entry
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to maintaining mechanical services equipment
- signage
- verbal, written and graphical instructions
- work bulletins.

Fault reporting:

- may be written or verbal
- is to be according to company's workplace procedures.

System adjustments may include:

- check of settings
- operational check of control valves
- pipe and duct system check for leaks
- volume control and fire check operation.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:

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- efficient use of material
- correct handling of hazardous materials
- appropriate recycling of material
- selecting appropriate products and components to ensure minimal environmental impact.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPMS3040A Install and maintain evaporative air cooling systems

Modification History

Prerequisite unit changed
Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPMS3020A

Unit Descriptor

This unit of competency specifies the outcomes required to install and maintain evaporative air cooling systems.

Application of the Unit

Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** installing evaporative air cooling systems are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient installation and maintenance of evaporative air cooling systems.
2	Identify installation requirements.	2.1	Quantity and type of materials required for installation are determined from plans and specifications.
		2.2	***Materials*** are identified, ordered and collected according to workplace procedures.
		2.3	Requirements for other services are identified and connection is planned according to regulatory requirements.
		2.4	Materials and equipment are checked for compliance with standards, and docket and order form, and for acceptable condition.

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3	Install and test unit.	3.1	Installation is set out in compliance with plans, specifications and relevant ***information***.
		3.2	Existing services are located and installation process is adjusted accordingly to avoid any disturbance.
		3.3	***Preparatory work***, including installation of piping and isolating valve and roof penetration and flashing, is carried out to specifications without unnecessary damage to surrounding structures or environment.
		3.4	Structural supports are installed in compliance with plans and specifications and National Construction Code.
		3.5	Ducting and control panels are installed according to authorities' requirements, plans, specifications and manufacturer recommendations.
		3.6	System is installed to plans, specifications and manufacturer recommendations.
		3.7	Installation is tested according to specification, code or standards for the application.
		3.8	***Sustainability principles and concepts*** are applied throughout the installation and maintenance process.
		3.9	Test results are documented in required format.
4	Maintain unit.	4.1	Service and maintenance requirements are identified from manufacturer specifications or authorities' requirements.
		4.2	Replacement components are checked and fitted periodically and as required according to specification.
		4.3	***Other services to the unit*** and maintenance operations are conducted, observing manufacturer and authorities' requirements.

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5	Clean up.	5.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice, and job specification.
		5.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		5.3	Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- literacy skills to:
  - complete workplace documentation
  - document test results
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
  - identify and accurately report to appropriate personnel any faults in tools, equipment or materials
  - undertake associated penetration and flashing of the roof, provision of water, and installation of required duct work
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- characteristics and application of different assemblies, including fixing and jointing

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techniques and methods
- effect of bacteria in water, and health implications
- effective isolation processes and procedures
- job safety analysis (JSA) and safe work method statements (SWMS)
- materials handling techniques
- WHS regulations relevant to the work activity
- personal protective equipment requirements and use
- processes of installing and testing evaporative air cooling systems
- roof penetration and flashing
- SI system of measurement
- statutory requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to install evaporative units
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, installing an evaporative air cooling system on a roof, including flashing the roof penetration; installing a plenum box and duct work to three diffusers; connecting cold water to an isolation valve within 1 metre of the appliance; connecting and completing installation testing, and commissioning its operation, ensuring:
  - application of sustainability principles and concepts
  - correct identification of requirements and details of proposed installation
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources

This competency is to be assessed using standard and authorised work practices, safety requirements and

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for assessment

environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace

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- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - hazardous materials and substances
  - identifying and testing for electrical hazards
  - manual handling
  - service lines
  - surrounding structures and facilities
  - trip hazards

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- use of tools and equipment
  - work site visitors and the public
  - working at heights
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements may include:

- clean-up protection
- waste management.

Quality assurance requirements may include:

- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- hand and power tools
- ladders
- lifting and load shifting equipment, including:
  - chain blocks
  - elevated work platforms
  - forklifts
  - hand trolleys
  - hoists and jacks
  - rollers
  - scaffolds
- measuring equipment
- roof safety equipment
- test equipment.

Materials may include:

- control panels
- diffusers

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- ducting materials
- evaporative air cooling systems
- grills
- insulation.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards and building codes
- safe work procedures relating to installing evaporative cooling systems
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Preparatory work that may need to be completed includes:

- ensuring structural integrity of roof
- installing piping and isolating valve
- installing piping and isolating valve in roof cavity
- installing plinths
- installing structural supports
- installing roof penetration and flashing for the unit.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient use of material
  - correct handling of hazardous materials
  - appropriate recycling of material
  - efficient water use
  - efficient energy retention

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- reuse of waste water
- selecting appropriate products, components and material to ensure minimal environmental impact.

Other services to units may include:

- electrical connections
- water supply.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPMS3041A Install domestic solid fuel burning appliances

Modification History

Prerequisite unit changed
Minor changes throughout the unit
Not equivalent to CPCPMS3021A

Unit Descriptor

This unit of competency specifies the outcomes required to interpret compliance requirements for domestic solid fuel burning appliance installation, plan and negotiate installation details with clients, and install appliances and flues to meet compliance and quality requirements. Work in this area must be completed according to relevant legislative, industry, customer and organisational requirements, including work health and safety (WHS) policies and procedures.

Application of the Unit

Site location for work application may be either domestic or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

Regulatory mechanisms may apply to this unit. Candidates are advised to check for regulatory limitations.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for installation.	1.1	***Installation information*** for ***domestic solid fuel burning appliances*** is interpreted and ***compliance requirements*** confirmed according to organisational, manufacturer and ***legislative requirements***.
		1.2	Installation permits are checked or obtained as necessary in consultation with client and local authority.
		1.3	***Installation sites*** are ***inspected*** and ***appliance installation locations*** confirmed as suitable or alternative locations negotiated with clients.
		1.4	Location preparation work required by other contractors is arranged in consultation with client.
		1.5	Heat sensitivities of building materials at appliance installation locations are confirmed, and ***heat protection strategies*** are confirmed with clients.
		1.6	Tasks are planned and ***equipment and materials*** are gathered and checked according to organisational requirements.
		1.7	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
2	Install appliance.	2.1	Appliance location is measured and marked according to compliance requirements.
		2.2	Floor protection material is measured and cut or made up and installed according to compliance requirements.
		2.3	Appliance is positioned and clearance distances are

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			checked to confirm compliance.
		2.4	Appliance is installed according to compliance and organisational requirements.
3	Install flue.	3.1	Flue dimensions and components are checked and additional sections or components obtained as required to meet compliance requirements.
		3.2	Locations and dimensions of ceiling and roof penetrations are calculated, measured, marked and checked according to compliance and organisational requirements.
		3.3	Penetrations are made with minimal damage to host materials and according to specifications and organisational requirements.
		3.4	Structural supports are installed according to plans and specifications.
		3.5	Opening is prepared in compliance with specifications, manufacturer recommendations and regulations.
		3.6	Flue and associated components are installed according to compliance and organisational requirements.
		3.7	Flashings and sealants are applied to restore integrity of ceilings and roofs according to compliance and organisational requirements.
		3.8	Penetration is performance tested to ensure correct fit of completed installation, and remedied as required.
4	Finalise installation.	4.1	Installed appliance and associated components are checked for complete and correct installation according to compliance and organisational requirements.
		4.2	Installation site is restored and equipment is cleaned, checked and stored according to organisational requirements.
		4.3	Operation of appliance is demonstrated to clients and ***factors affecting optimum performance*** are explained.
		4.4	Conformance certificate is prepared and processed according to compliance and organisational

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requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - report faults
  - use language and concepts appropriate to cultural differences
- literacy skills to:
  - complete written documentation, such as:
    - appliance conformance certificates
    - installation compliance certificates
    - local authority permit applications
  - read and interpret instructions, specifications and standards, such as:
    - AS/NZS 2918 Domestic solid fuel burning appliances – installation
    - compliance certification plates on appliances
    - guidelines and updates for legislation and regulations regarding domestic solid fuel burning appliances
    - manufacturer installation instructions and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to plan and set out work
- teamwork skills to:
  - work with others to action tasks
  - relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities

Required knowledge

- factors affecting selection of installation locations for appliances
- factors affecting compliance and non-compliance of domestic solid fuel burning appliances
- heat damage protection requirements for appliances
- legislation, regulations and standards that apply to the installation and emissions of domestic solid fuel burning appliances
- heat-response categories of construction materials:
  - heat sensitive
  - heat tolerant

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    - heat resistant
- installation requirements for different types of domestic solid fuel burning appliances
- job safety analysis (JSA) and safe work method statements covering:
    - asbestos recognition and reporting requirements
    - manual handling of appliances
    - personal protective equipment (PPE) for different tasks and situations
    - working safely at heights
    - worksite housekeeping
- quality requirements
- principles and products of combustion
- requirements and methods for maintaining structural integrity of buildings, roof structures and existing roof coverings
- SI system of measurement
- structure and function of flue elements and principles of flue draw, and effects of:
    - bends and horizontal sections
    - climatic conditions
    - surrounding buildings and trees
- types of domestic solid fuel burning appliances and methods for safe operation
- types and condition of wood used as fuel and impacts on:
    - efficiency of appliances
    - emissions

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, providing that simulated or project-based assessment techniques fully replicate workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- apply safety requirements throughout the work sequence, including:
  - work with or near electricity
  - select and use processes, tools and equipment
  - use PPE
  - work at heights
- communicate and work effectively and safely with others
- apply sustainability principles and concepts while installing solid fuel burning appliances
- locate, interpret and apply information, standards and specifications relevant to the installation of domestic solid fuel burning appliances
- install at least two different domestic solid fuel burning appliances according to client, compliance and workplace requirements; appliances may be for:
  - central-heating
  - cooking
  - space-heating
  - water-heating
  - combinations of applications
  - fireplace inserts
  - free-standing
  - in-built
  - non-tested.

Context of and specific resources for

This unit of competency is to be assessed using standard and authorised work practices, safety requirements and environmental

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assessment

constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on

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competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Installation information may include:

- AS/NZS 2918 Domestic solid fuel burning appliances – installation (Australian standards are frequently revised and users must always check for currency)
- client requirements
- compliance certification plates on appliances
- JSA
- manufacturer instructions and specifications
- National Construction Code (NCC)
- safe work method statements
- work order.

Domestic solid fuel burning appliances may include:

- appliances for:
  - central-heating
  - cooking
  - space-heating
  - water-heating
  - combinations of applications
- fireplace inserts
- free-standing
- in-built

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- non-tested
- tested.

Compliance requirements may include:

- Australian standards, such as:
  - AS/NZS 2918 Domestic solid fuel burning appliances – installation
  - AS/NZS3500 Plumbing and drainage (set)
- clearance distances to heat sensitive materials, including:
  - ceilings
  - curtains
  - furniture
  - timbers
  - walls
- codes of practice, such as HB39 Installation code for metal roof and wall cladding
- emissions compliance certification plate
- manufacturer specifications
- NCC
- types and dimensions of floor protection.

Legislative requirements may include:

- commonwealth, state and territory, and local legislation and regulations relating to:
  - emissions
  - installation permits
  - work health and safety.

Inspection of installation sites may include:

- assessing height and proximity of neighbouring buildings and trees
- determining structural elements and building materials, especially in regard to presence of asbestos; areas to be assessed include:
  - ceilings
  - floors
  - roofs
  - walls
- measuring dimensions of furniture and fittings close to appliance locations
- finding and noting locations of:
  - electricity
  - power points

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- rooftop outlets for heating, ventilation and air-conditioning (HVAC) systems
- structural elements of buildings.

Appliance installation locations should:

- allow clearance distances and accessibility clearance according to manufacturer specifications or AS/NZS 2918 Domestic solid fuel burning appliances – installation
- be suitable for installation of flue according to manufacturer specifications or AS/NZS 2918 Domestic solid fuel burning appliances – installation
- be suitable for operation of fans, if required
- comply with emissions compliance requirements
- comply with health and safety requirements
- minimise discomfort caused by cool air draught
- provide optimum heat circulation.

Heat protection strategies:

- should include:
  - compliant floor protection
  - compliant clearance distances
- may include:
  - additional shielding
  - reduced compliant clearance distances.

Equipment and materials may include:

- appliances and associated components
- drills
- flashing roof materials, including:
  - fibreglass
  - laminate
  - metal roof covers of concealed or pierce fixed types
  - plastic building sheets for walls and roofs
  - polyethylene
  - rainwater goods
  - straw or wool
  - thermal insulation of reflective foil
  - fixings, which may include:
    - metal self drilling and tapping screws
    - rivets
    - sealants such as silicon and solder
- grinders
- hammers

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- ladders
- PPE
- rivet gun
- saws
- sealant applicators
- sealants
- steel tape
- tile cutters
- tin snips.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - selecting appropriate material to ensure minimal environmental impact
  - efficient use and recycling of material
  - efficient energy and water use
  - disposing of waste material to ensure minimal environmental impact.

Factors affecting optimum performance may include:

- general cleaning and maintenance requirements
- type and condition of fuel used in appliances.

Unit Sector(s)

Competency field

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPMS4011B Design, size and lay out heating and cooling systems

Modification History

Minor changes throughout the unit
Equivalent to CPCPMS4011A

Unit Descriptor

This unit of competency specifies the outcomes required to design, size and document the layout of heating and cooling systems for multi-floor structures.
It covers preparing for the work, identifying and confirming system specifications and requirements, designing system layout, and work finalisation processes, including records and documentation.

Application of the Unit

This unit applies:
to ducting systems for air conditioning, heating or ventilation purposes in buildings Class 1 or 2 with a maximum static pressure of 0.75kPa and a maximum velocity of 12.5 metres per second piping systems conveying heating and chilled water operating at a maximum pressure of 700kPa or a maximum temperature of 100°C, and systems having a maximum output of 50kW and total air quantities not exceeding 950 litres per second.
Site location for the application of the plan will be residential and commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for design.	1.1	Nature and scope of design task are identified and confirmed.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** planning, sizing and documenting the layout of heating and cooling systems are adhered to throughout the work.
		1.3	Work is organised and sequenced in conjunction with others involved in or affected by the work.
		1.4	***Tools and equipment*** required for designing, sizing and documenting the layout of heating and cooling systems, including personal protective equipment, are selected and checked for serviceability.
		1.5	Work area in which design process is to be conducted is prepared.
2	Identify system requirements.	2.1	Information and specifications for required work are obtained and confirmed, if necessary by site inspection.
		2.2	***Statutory and regulatory authorities'*** requirements relevant to work are consulted and applied to all aspects of the work, using relevant ***information***.
		2.3	Heating and cooling requirements are determined from building drawings, plans and specifications.
		2.4	***Air conditioning*** or ***small bore heating system*** is sized to provide for required heating and cooling load and to provide required piping and ducting according to standards, and regulatory authorities' and workplace

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			requirements.
		2.5	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
3	Design system layout.	3.1	Layout of heating and cooling system is designed according to building plans, relevant standards and workplace procedures.
		3.2	***Materials*** required are specified and optimised according to standards from the proposed design.
		3.3	Plans are recorded according to regulatory authorities' and workplace requirements.
4	Restore work area.	4.1	Work area is restored according to workplace procedures.
		4.2	Tools and equipment used in the process are refurbished and left according to workplace procedures.
		4.3	Documentation, including work backup, is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - identify requirements, including system requirements
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- literacy skills to:
  - complete written workplace documentation, including:
    - work backup
    - record plans
  - read and interpret:
    - documentation from a variety of sources
    - regulations, standards, plans, specifications and drawings
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
  - identify and accurately report to appropriate personnel any faults in tools, equipment or materials
  - interpret plans and specifications to design, size and document the layout of heating and cooling systems for multi-floor buildings up to a height of six floors
- technology skills to:
- access and understand site-specific instructions in a variety of media
- use mobile communication technology

Required knowledge

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- characteristics and application of different fixing and joining techniques and methods
- characteristics and application of pipe and ducting systems, including their fittings and fixture supports and fixing and joining techniques
- design concepts and performance measures for heating and cooling systems
- effective isolation processes and procedures
- electrical and electronic principles and safety requirements
- environmental impact of gases and Environment Protection Authority (EPA) requirements
- job safety analysis (JSA) and safe work method statements (SWMS)
- principles, operation and characteristics of heating and cooling systems
- process of designing, sizing and documenting the layout of heating and cooling systems
- properties of water and air, including pressure and flow rates
- relevant information sources for the work activity
- relevant statutory requirements related to designing, sizing and documenting the layout of heating and cooling systems
- SI system of measurements
- standards applicable to heating and cooling systems
- use of computers and relevant computer-aided design (CAD) software
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to planning, sizing and documenting the layout of a heating and cooling system
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, designing, sizing and documenting the layout details of a domestic heating and cooling system requiring a minimum heat load of 150 megajoules (MJ) per hour plus a commercial heating and cooling system for a structure with at least four floors, ensuring:
  - application of sustainability principles and concepts
  - correct identification of details of the plan
  - correct selection and use of appropriate processes, tools and equipment
  - completion of all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

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Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning

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experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances
  - other machines
  - surrounding structure and facilities
  - trip hazards
  - underground services
  - use of tools and equipment

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- work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Tools and equipment may include:

- computers running appropriate CAD software
- drawing instruments
- measuring equipment.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to designing, sizing and documenting heating and cooling systems
- signage
- verbal, written and graphical instructions
- work bulletins

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- work schedules, plans and specifications.

Air conditioning may include:

- evaporative cooling system
- hydronic heating system
- hydronic cooling system
- warm air system
- refrigerated air conditioning system.

Small bore heating systems include:

- boilers
- piping
- radiators.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - use of efficient design principles throughout
  - incorporating efficient use of material in the design
  - design that ensures minimal environmental impact
  - choice of appropriate components and equipment to ensure minimal environment impact.

Materials may include:

- drafting materials and equipment
- relevant structure plans and specifications.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

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Custom Content Section

Not applicable.

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CPCPMS4022A Commission air and water systems

Modification History

Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPMS4002A

Unit Descriptor

This unit of competency specifies the outcomes required to test and commission air and water heating and cooling systems.
It covers preparing for the work, determining testing requirements, preparing systems for balancing, and the physical balancing, testing and commissioning of the systems and completion of work finalisation processes, including recording.

Application of the Unit

This unit applies to:

- ducting systems for air conditioning, heating or ventilation purposes in buildings Class 1 or 2 with a maximum static pressure of 0.75kPa and a maximum velocity of 12.5 metres per second
- piping systems conveying heating and chilled water operating at a maximum pressure of 700kPa or a maximum temperature of 100°C, with a maximum output of 50kW and total air quantities not exceeding 950 litres per second.

Site location for work application will be residential and commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for work.	1.1	Information, plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** testing and commissioning air and water systems are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment*** for testing and commissioning air and water systems, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient testing and commissioning process.
2	Determine testing requirements.	2.1	Equipment is checked for safe operation and correct functioning.
		2.2	Equipment performance data is checked against plans, specification requirements and other relevant ***information***.
		2.3	Instruments and associated equipment suitable for measuring quantities are selected according to job specification.

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3	Prepare system for balancing.	3.1	Dampers are set in the open or specified position and operational check of system-related fans and ducting is carried out according to workplace procedures.
		3.2	Automatic control devices are energised to provide maximum demand for airflow.
		3.3	Piping system is checked for flow direction and leaks, and operational check of system and related pumps is carried out.
		3.4	All manual and automatic valves are set in the specified position.
4	Balance, test and commission system.	4.1	Valves or throttling devices are adjusted to achieve specified water flow ratings.
		4.2	Air volumes moved by system fans are measured.
		4.3	Dampers and terminal devices are correctly adjusted to achieve specified airflow ratings.
		4.4	Automatic controls and devices are set to specified settings.
		4.5	Testing and balancing of system is carried out according to job specification, manufacturer recommendations and ***sustainability principles and concepts***.
		4.6	Test and monitored results are documented in format required by job specification and/or manufacturer.
5	Restore work area.	5.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice, and job specification.
		5.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		5.3	Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - record test and monitored results
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
  - identify and accurately report to appropriate personnel any faults in tools, equipment or materials
  - test, balance and commission air conditioning, heating and ventilation ducting and piping systems
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- application of mechanical, hydraulic, electric and electronic principles and safety requirements
- design concepts, tests and performance standards for measuring various water and air

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systems
- effect of bacteria in water, and potential impact on health
- environmental impact of gases and Environment Protection Authority (EPA) requirements
- job safety analysis (JSA) and safe work method statements (SWMS)
- operating principles and characteristics of system components used in water and air systems
- performance standards for balancing systems
- processes of commissioning air and water systems
- relevant information sources for the work activity
- relevant statutory requirements related to installing, testing, balancing, commissioning and operation of air and water systems
- SI system of measurements
- standards applicable to testing, balancing and commissioning air and water systems
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to testing, balancing and commissioning air and water systems
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- as a minimum, the ability to balance and commission an air conditioning system (up to 150 megajoules) for a domestic situation and a commercial air conditioning system for a structure of at least four floors, plus balance and commission a hydronic water heating system for a structure of at least four floors, ensuring:
  - application of sustainability principles and concepts
  - correct identification of details of the plan
  - correct selection and use of appropriate processes, tools and equipment
  - completion of all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

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Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning

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experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - hazardous materials and substances
  - identifying and testing for electrical hazards
  - other machines
  - surrounding structure and facilities
  - trip hazards
  - underground services
  - use of tools and equipment
  - work site visitors and the public

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- working at heights
  - working in confined spaces
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements are to cover water quality management and may include:

- clean-up protection
- ozone management
- stormwater protection
- waste management.

Quality assurance requirements may include:

- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- elevated work platforms
- hand and power tools
- ladders
- scaffolds
- test equipment:
  - tachometer
  - anemometer
  - differential pressure gauges.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos

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- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to testing, balancing and commissioning air and water systems
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient use of material
  - correct handling of hazardous materials
  - efficient water usage
  - selecting appropriate components to ensure minimal environmental impact.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPMS4023A Design compressed air systems

Modification History

Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPMS4003A

Unit Descriptor

This unit of competency specifies the outcomes required to design and size compressed air distribution systems and prepare system plans and specifications.

Application of the Unit

This unit of competency supports the needs of experienced plumbers with responsibility for providing consultancy or supervision in the evaluation and design of compressed air systems.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	Evaluate design parameters.	1.1	Scope of work for the design of compressed air systems is established.
		1.2	***Client requirements*** are determined from plans, specifications and client brief.
		1.3	***Cost-benefit analysis*** is conducted comparing a range of materials and system designs.
		1.4	***Statutory, regulatory and Australian and New Zealand Standard requirements*** for the design of compressed air systems are interpreted, analysed and applied.
		1.5	***Manufacturer requirements*** and trade and technical manuals are interpreted.
		1.6	Additional research, including a ***desktop study***, is conducted to outline design parameters.
		1.7	***Performance requirements*** are established.
2	Plan and detail system components.	2.1	***Layout of pipework systems*** and type and location of ***fittings and valves*** are planned.
		2.2	***System calculations*** are conducted for a range of applications.
		2.3	Compressed air system ***equipment and components*** are sized and specified.
		2.4	Noise reduction methods are analysed and suitable methods specified.
		2.5	Approved ***materials*** and ***jointing methods*** and ***installation requirements*** are specified.
3	Design and size systems.	3.1	Compressed air systems are designed for a range of applications.
		3.2	Compressed air systems are designed and sized using computer software packages.
		3.3	***Sustainability principles and concepts*** are applied

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			throughout the design process.
4	Prepare documentation	4.1	***Plans*** are prepared for a range of compressed air systems.
		4.2	***Specification*** for a compressed air system is prepared.
		4.3	***Testing*** and ***commissioning schedule*** is prepared.
		4.4	***Operation and maintenance manual*** is produced.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - confirm job specifications and client requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - report faults with application
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
- literacy skills to:
  - read and interpret:
    - codes, legislation and standards
    - documentation from a variety of sources
    - plans and specifications
    - regulatory authorities' requirements
- numeracy skills to apply measurements and calculations
- planning and organising skills to plan for and set out work

Required knowledge

- nature of materials and effect of their performance in a variety of conditions
- WHS and organisational quality procedures and processes
- principles of technology in the design of compressed air systems
- terminology, definitions, installation methods, applications and hazards identified in relation to compressed air devices and systems used according to Australian and New Zealand standards and other standards, codes or standard operating procedures
- work drawings and specifications
- workplace safety requirements, including relevant statutory regulations, codes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- apply sustainability principles and concepts associated with the design
- identify electrical hazards associated with the design
- evaluate and document design parameters including client, regulatory, manufacturer and Australian and New Zealand standard requirements for a range of compressed air systems
- produce appropriate layouts for compressed air systems according to manufacturers' and regulatory requirements
- calculate pipe sizes according to regulations and manufacturers' requirements
- design and size a compressed air system using appropriate software
- prepare plans for a range of compressed air systems to industry standards
- prepare a specification for a compressed air system
- prepare a testing and commissioning schedule
- prepare an operation and maintenance manual.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

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Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the

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assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Client requirements may include:
- architectural specifications
- builders' specifications
- owner requirements
- specialist use applications.

Cost-benefit analysis:
- compares the range of suitable treatment and disposal options, materials, system choices, disinfection options, water savings and environmental benefits compared to initial and ongoing maintenance costs.

Statutory, regulatory and Australian and New Zealand standard requirements include:
- Acts
- Australian and New Zealand standard requirements
- industry standards
- local and state government policies, including group and strata titling
- National Construction Code
- regulations.

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Manufacturer requirements may include:

- material specifications
- sizing tables
- technical and trade manuals.

Desktop study may include collection and interpretation of existing data for design purposes in:

- architectural and building plans and other documents, including:
  - applications
  - brochures
  - forms
  - policies
  - reports
- council plans
- developer plans
- manufacturer data.

Performance requirements may include:

- Australian and New Zealand standards
- local authority plans
- operational pressures and compressed air consumption
- pressure and air quality.

Layout of pipework systems may include:

- building integrity and aesthetic appeal should not be unduly effected by pipework
- principles of economy, serviceability, durability and fit for use should be applied.

Fittings and valves may include:

- bends
- couplings
- isolating valves
- pressure relief valves
- tees
- unions.

System calculations may include:

- air consumption
- compressed air volume and storage
- distribution pressures
- energy

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- interpretation of design charts and tables
- pipe sizing.

Equipment and components may include:

- air filtering equipment, including proprietary filtering systems and air scrubbing systems
- capacity and size
- compressed air appliances, including air-operated tools, machinery and equipment
- moisture removal methods
- mounting and installation requirements
- oiling equipment
- reciprocating compressors
- single and multi-stage compressors
- valves, pressure controls and components.

Materials may include:

- approved pressure-rated materials
- copper
- steel.

Jointing methods may include:

- brazing
- mechanical joints
- threading.

Installation requirements may include:

- clipping
- installation details
- jointing requirements
- level of workmanship.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - using efficient design principles throughout
  - incorporating efficient use of material in the design
  - design that ensures minimal environmental impact
  - choice of appropriate components and equipment.

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Plans:

- may include:
  - axonometrics
  - cross-sections
  - details
  - elevations
  - isometrics
  - schematics
  - sections
- may be produced using:
  - computer generation
  - Indian ink
  - pencil
  - pigment liner.

Specification may include:

- appliances
- clipping
- detailing of specialised components
- jointing
- manufacturer requirements
- materials
- valves
- workmanship.

Testing may include:

- flow testing
- inspection checklist
- leak testing
- pressure testing
- quality assurance (QA) audit.

Commissioning schedule may include:

- check fit for purpose
- check for burrs and obstructions
- commission appliances
- purge system
- remove contaminants.

Operation and maintenance manual may include:

- check for blockages
- leak detection
- regular inspections
- regular maintenance requirements.

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Unit Sector(s)

Functional area

Unit sector	Plumbing and services

Custom Content Section

Not applicable.

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CPCPMS5010A Design steam generation and distribution systems

Modification History

Changes to unit title, descriptor, performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPMS5000A

Unit Descriptor

This unit of competency specifies the outcomes required to design steam generation and distribution systems, including pipe and valve sizing, material selection, and the preparation and specification of documentation for steam distribution systems.

Application of the Unit

This unit of competency supports development of skills and knowledge required for competent workplace performance in a consultancy or supervisory capacity in relation to plumbing services and hydraulics.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	Evaluate design parameters.	1.1	***Scope of work*** for steam generation and distribution systems is established.
		1.2	***Design requirements*** are determined from relevant Australian standards, codes, plans, specifications and client brief.
		1.3	***Cost-benefit analysis*** is conducted comparing a range of materials and system designs.
		1.4	***Statutory and regulatory requirements and relevant Australian standards and codes*** for the design of steam generation and distribution systems are analysed and applied.
		1.5	***Manufacturer requirements*** and trade and technical manuals are interpreted.
		1.6	Additional research, including a ***desktop study***, is conducted to outline design parameters.
		1.7	Factors that contribute to quality, safety and time efficiency are determined.
		1.8	***Performance requirements*** are established, considering safety of system users or building occupants.
2	Plan and detail system components.	2.1	***Layout of pipework systems*** and types of ***fittings, valves*** and controls are planned.
		2.2	***Pipe size calculations*** are performed for a range of applications.
		2.3	***Steam appliances*** are specified, steam consumption is calculated and ***boilers*** required are sized and specified.
		2.4	***Steam circuits*** are detailed and distribution pressures for a range of applications are specified.
		2.5	***Steam trap types and their operation*** are specified and detailed.
		2.6	***Steam injection*** systems are specified.
		2.7	***Insulation*** is specified.

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		2.8	***Pipe supports*** are designed for a range of applications.
		2.9	Approved ***materials***, ***jointing methods*** and ***installation requirements*** for steam generation and distribution systems are specified.
3	Design and size systems.	3.1	Steam distribution systems are ***designed*** for a range of applications.
		3.2	Steam distribution systems are designed and sized using calculations and computer software packages.
		3.3	***Sustainability principles and concepts*** are applied throughout the design.
4	Prepare documentation.	4.1	***Plans*** and ***specifications*** are prepared for a range of steam generation and distribution systems.
		4.2	***Testing*** and ***commissioning schedule*** is prepared.
		4.3	***Operation and maintenance manual*** is produced, including information on how to properly and safely maintain the system.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - communicate with others to ensure safe and effective work practices
  - confirm job specifications and client requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to develop creative and responsive approaches
- literacy skills to:
  - prepare written documentation, including:
    - operation and maintenance manual
    - plans, specifications and schedules
  - read and interpret:
    - manufacturer requirements and manuals
    - plans, specifications, drawings and design briefs
    - statutory and regulatory requirements and standards
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and set out work
  - research, collect, organise and understand information relating to the design of steam generation and distribution systems
  - take initiative and make decisions
- problem-solving skills to analyse requirements, consider options and design an appropriate system
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities.
- technical skills to prepare and specify steam distribution system plans
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

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- common terminology and definitions used in design of steam generation and distribution systems for all classes of building, including industry terminology such as:
  - absolute pressure
  - enthalpy
  - enthalpy of evaporation and of saturated steam
  - enthalpy of saturated water
  - gauge pressure
  - heat and heat transfer
  - latent heat
  - specific enthalpy
  - specific heat capacity
- principles of technology in the design of steam generation and distribution systems
- requirements of commonwealth, state or territory regulatory authorities, relevant Australian standards, codes and manufacturer specifications, including hazards identified in relation to devices and systems used
- SI system of units related to steam
- terms, including relevant Australian standard and code definitions, manufacturer terms and naming conventions
- workplace safety requirements, including relevant statutory regulations, codes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to, as a minimum, provide evidence of the ability to:

- apply sustainability principles and concepts throughout the design of the system
- design, size and document layout details, including a specification for a 100-bed three-storey hospital incorporating a laundry
- evaluate and document design parameters to relevant Australian standards, codes, regulations, and client and manufacturer requirements for a steam generation and distribution system
- design and size a steam generation and distribution system using appropriate software
- prepare testing and commissioning schedules
- produce operation and maintenance manuals
- communicate with others to ensure safe and effective workplace operations.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the

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minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct,

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indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Scope of work must include:

- barriers to heat transfer
- effects of air in a steam system
- heat transfer
- interpreting plans and specifications, and sizing and documenting layout of steam generation and distribution systems for residential, commercial and industrial applications for either new projects or an existing structure being renovated, extended, restored or maintained
- principles and properties of steam systems, including:
  - characteristics of condensation
  - methods of condensate removal
- steam applications, including commercial, manufacturing, institution and machinery and equipment operation
- working with types of steam and steam quality, including:
  - dry steam
  - flash steam
  - properties of steam at varying pressures
  - superheated steam
  - wet steam.

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Design requirements may include:

- architectural plans
- builder specifications
- boiler selection
- fire safety requirements
- flow requirements and sizing of pipework
- owner requirements
- pipework identification
- ventilation requirements.

Cost-benefit analysis:

- compares the range of suitable materials and system choices available to enable cost-effective choices to be made without compromising integrity of the project
- may include:
  - design styles
  - energy costs
  - expected design life
  - labour costs
  - material costs
  - safety factors
  - speed of installation
  - suitable materials.

Statutory and regulatory requirements and relevant Australian standards and codes may include:

- Acts, regulations and commonwealth, state or territory, and local government requirements
- National Construction Code
- relevant Australian standards and codes.

Manufacturer requirements may include:

- material specifications
- recommended specific fixings for pipework
- sizing tables
- technical and trade manuals.

Desktop study must include:

- architectural and building plans
- developer plans
- documents, including:
  - applications
  - brochures

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- forms
- other reports as available
- manufacturer data
- policies.

Performance requirements may include:

- steam generation and consumption, and steam and pressure quality, established using relevant Australian standards, codes and manufacturer information.

Layout of pipework systems:

- must include:
  - principles of economy, serviceability, durability and fit for use
  - location of pipework (fire rating of enclosure)
- should not unduly affect building integrity and aesthetic appeal.

Fittings and valves may include:

- fittings:
  - bends
  - couplings
  - condensate traps
  - steam traps
  - steam headers
  - steam strainers
  - tees
  - unions
- valves:
  - isolating valves
  - pressure relief valves.

Pipe size calculations must include:

- energy
- pressure
- sizing
- storage
- volume.

Steam appliances:

- may include:
  - calorifiers

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- industrial applications
- kitchen and laundry appliances
- sterilisers
- water heaters
- details must include:
  - components
  - construction
  - electronic controls
  - methods of temperature and pressure control.

Boilers:

- may include:
  - coal
  - electric
  - fire tube
  - gas
  - oil
  - packaged
  - solid fuel
  - water tube
- factors to be considered when selecting a boiler must include:
  - advantages and disadvantages of boiler types
  - capacity and size
  - designs based on anticipated use
  - energy sources
  - methods of reducing heat losses
  - pressure controls and components
  - storage requirement calculations
  - suitable time period between refilling
  - valves.

Steam circuits must include:

- condensate return
- feed pumps
- feed tanks
- headers
- steam distribution
- water treatment.

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Steam trap types and their operation:

- types, which may include:
  - mechanical
  - thermodynamic
  - thermostatic
  - other applicable types
- operation, which must include:
  - installation
  - location.

Steam injection must include:

- noise control
- open ended pipe
- proprietary
- sparge pipe.

Insulation:

- may include:
  - fibreglass
  - rock wool
- insulation protection, including:
  - plastic
  - sheet metal.

Pipe supports may include:

- anchors
- bracket spacing
- corrosion protection
- hanging brackets
- manufacturer-recommended specific fixings
- material requirements
- provision for expansion.

Materials may include:

- copper
- steel
- other approved materials.

Jointing methods may include:

- brazing
- mechanical joints
- threading
- welding.

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Installation requirements may include:

- pipe protection:
  - cover
  - corrosion
  - impact
- fire rating
- level of workmanship
- manufacturer-recommended specific fixings
- pipe support
- provision for expansion
- provision for drainage of condensation
- serviceability and access.

Designed may include:

- cost relating to performance, including:
  - milestones
  - standard procedures
  - standards of work
  - work schedules
- prescriptive designs, including detail relating to:
  - materials and quality of work
  - nominated subcontractors
  - provision of on-site facilities and site access
  - quality assurance.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - selecting appropriate material to ensure minimal environmental impact
  - efficient energy usage
  - water usage
  - efficient use and recycling of material
  - disposing of waste material to ensure minimal environmental impact.

Plans:

- may include:
  - axonometrics
  - cross-sections

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- details
- elevations
- isometrics
- schematics
- sections
- may be produced using:
  - computer generation
  - drawing equipment.

Specification may include:

- boiler selection
- fire safety
- flow requirements
- jointing
- manufacturer requirements
- materials
- residual pressures
- specialised components
- support
- testing
- valve selection
- workmanship
- work health and safety (WHS).

Testing may include:

- defect inspection
- flow
- inspection checklist
- leak
- pressure
- performance
- quality assurance (QA) audit.

Commissioning schedule may include:

- boiler
- check for foreign material
- containment
- leak check
- operation
- pump
- system certification
- system defects
- system functions as per design

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- treatment system.

Operation and maintenance manual may include:

- as installed drawings
- certification documentation
- maintenance schedules
- manufacturer brochures and technical information
- system operational procedures
- regular water quality testing
- results of commissioning test.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPMS5011A Design air conditioning and ventilation systems

Modification History

Changes to unit descriptor, application, performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPMS5001A

Unit Descriptor

This unit of competency specifies the outcomes required to evaluate and design air conditioning and ventilation systems for residential and commercial applications.

Application of the Unit

This unit of competency supports development of skills and knowledge required for competent workplace performance in a consultancy or supervisory capacity in relation to plumbing services and hydraulics.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	Evaluate design parameters.	1.1	***Scope of work*** for the design of air conditioning and ventilation systems is established.
		1.2	***Design requirements*** are determined from relevant Australian standards, codes, plans, specifications manufacturer instructions and client briefs, including factors that contribute to quality, safety and time efficiency are determined.
		1.3	User comfort conditions and ***specific use conditions*** are evaluated and ***psychometric evaluation*** and ***heat loads are calculated***.
		1.4	***Building heat losses*** are evaluated.
		1.5	Distribution requirements for air conditioning and ventilation system applications are specified.
		1.6	Range of air conditioning and ventilation systems are evaluated according to given applications.
		1.7	Mechanical services drawings are evaluated and interpreted.
		1.8	Health risks that may arise due to poor maintenance of air conditioning and ventilation systems are evaluated.
		1.9	Minimum performance requirements are specified for several different air conditioning and ventilation systems.
		1.10	Manufacturer specifications and technical manuals are evaluated for suitability for a range of design applications.
		1.11	Additional research, including a ***desktop study***, is conducted to outline design parameters.
		1.12	Safety of system users or building occupants is considered.

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2	Plan system components.	2.1	Appropriate zoning of air conditioning and ventilation systems is planned to comply with given specific performance objectives.
		2.2	Air conditioning units are specified for optimum performance with reference to ***legislation, standards and other relevant documentation***.
		2.3	Fan types are specified for a range of applications with reference to legislation, standards and other relevant documentation.
		2.4	Air diversion systems, including registers, are planned to ensure a balanced system with reference to legislation, standards and other relevant documentation.
		2.5	Required ventilation and duct work components are planned and locations are specified with reference to legislation, standards and other relevant documentation.
		2.6	Approved materials for air conditioning and ventilation systems are ***specified***.
		2.7	***Plans*** and drawings are completed using relevant Australian standards, codes, manufacturer installation requirements, drawing symbols related to air conditioning and ventilation according to legislation, and other relevant documentation.
3	Design and size systems.	3.1	Volume air changes per hour are calculated from given floor plans and details.
		3.2	Methods for eliminating health risks from existing or proposed systems are specified with reference to legislation, standards and other relevant documentation.
		3.3	***Design and sizing*** for a range of air conditioning and ventilation systems are determined for given ***applications***.
		3.4	***Sustainability principles and concepts*** are applied throughout the design.

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4	Test systems.	4.1	Test procedures for air conditioning and ventilation systems are evaluated.
		4.2	***Tests*** are conducted using appropriate ***testing equipment***, results are recorded and report is prepared.
		4.3	Adjustments required as a result of testing are planned, designed and specified.
5	Prepare documentation.	5.1	Client brief of the desired design is prepared.
		5.2	Appropriate checklist, including formulas required to carry out an air balance to a given specification, is developed.
		5.3	Plans and specifications are prepared for a range of air conditioning and ventilation systems.
		5.4	***Testing*** and ***commissioning schedule*** is prepared.
		5.5	***Operation and maintenance manual*** is produced, including information on how to properly and safely maintain the system.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - communicate with others to ensure safe and effective work practices
  - confirm job specifications and client requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
- literacy skills to:
  - prepare written documentation, including:
    - operation and maintenance manual
    - plans, specifications and schedules
  - read and interpret:
    - plans, specifications, drawings and design briefs
    - manufacturer requirements and manuals
    - statutory and regulatory requirements and standards
- initiative and enterprise skills to develop creative and responsive approaches
- numeracy skills to:
  - apply formulas and calculate air displacements and returns
  - calculate heat loads
- planning and organising skills to:
  - research, collect, organise and understand information relating to the design of air conditioning and ventilation systems
  - take initiative and make decisions
- problem-solving skills to analyse requirements, carry out tests, consider options and design an appropriate system
- teamwork skills to be able to work with others and action tasks and relate to people from a range of cultural ethnic backgrounds and varying physical and mental abilities.
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

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- air psychometrics and the use of psychometric charts
- requirements of the National Construction Code, relevant Australian standards and other applicable codes or standard operating procedures relevant to the sector
- compliance with WHS and organisational quality procedures and processes
- hazards associated with devices used in air conditioning and ventilation systems
- heat load calculations
- installation methods used in air conditioning and ventilation systems
- nature of materials and effect of performance
- plans and specifications
- terminology and definitions used in air conditioning and ventilation systems

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

This unit of competency could be assessed by:

- developing an air conditioning and ventilation system for a given project, including the schedule of works and job specification
- preparing a graphical presentation of an air conditioning or ventilation system solution with specifications.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to as a minimum, provide evidence of the ability to:

- design, size and document the layout details for an air conditioning and ventilation system for a 10 storey residential building with ground floor shops and basement car park
- evaluate and document design parameters to relevant Australian standards, codes, regulatory, client and manufacturer requirements for system components, including:
  - air conditioning units
  - ducting systems
  - controls
  - fans
  - zones
- develop an appropriate checklist for tests to be carried out on the system, including formulas required to carry out an air balance
- conduct tests, record and evaluate test results, and prepare a report
- prepare testing and commissioning schedules for air conditioning and ventilation systems
- prepare operation and maintenance manuals for air

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conditioning and ventilation systems
- apply sustainability principles and concepts throughout the air conditioning and ventilation system design
- communicate with others to ensure safe and effective workplace operations.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning

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knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Scope of work may include:

- interpreting plans and specifications
- sizing and documenting layout for air conditioning and ventilation systems, including residential and

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	commercial systems • new projects or an existing structure being renovated, extended, restored or maintained.
Design requirements must include:	• architectural plans • building specifications • fire safety • National Construction Code • owners • tenants • air-flow requirements and sizing of duct work.
Specific use conditions may include:	• age and activity of occupants • computer requirements • food preparation • smoke exhaust • wet-bulb and dry-bulb temperature and humidity.

Psychometric evaluation may include:	• absolute, specific and relative humidity
	• air composition
	• air properties, including:
	  • density
	  • expansion coefficient
	  • kinematic viscosity
	  • Prandtl number
	  • specific heat
	  • temperature
	  • thermal conductivity
	• altitude, density and volume
	• determination of the air condition using a psychometric or Mollier chart, showing:
	  • dewpoint temperature
	  • dry-bulb temperature
	  • enthalpy
	  • humidity ratio
	  • relative humidity
	  • specific volume
	  • wet-bulb temperature.

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Calculation of heat loads must include:

- assessment of factors affecting heat load, including:
  - building materials
  - insulation
  - number of personnel
  - number of windows
  - room dimensions
  - usage
  - weather effects
- using:
  - calculations and computer software systems
  - heat load calculation methods and formulas.

Building heat losses may include:

- construction materials
- insulation materials
- maintaining plenum
- occupancy
- room sizes.

Desktop study may include collection and interpretation of data for design purposes in:

- architectural and building plans
- developer plans
- manufacturer data
- documents:
  - applications
  - brochures
  - forms
  - policies
  - other reports as available.

Legislation, standards and other relevant documentation is to be according to commonwealth, state and territory legislation and regulations and may include:

- WHS requirements, such as:
  - growth and distribution of *Legionella pneumophila* bacteria and other water and airborne infectious bacterial agents
  - handling of materials, including hazardous materials and substances
  - hazard control
  - organic and inorganic contaminants
  - personal protective clothing (PPE) and equipment
  - use of first aid equipment

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- use of tools and equipment
- workplace environment and safety
- environmental requirements, including water quality management, which may include the breeding of mosquitoes
- quality assurance requirements, including:
  - AS1100 Technical drawing materials
  - AS/NZS1668 Ventilation systems: Parts 1 and 2
  - AS/NZS1677 Refrigerating systems
  - AS/NZS 3666 Handling microbial systems
  - Environment Protection Authority (EPA)
  - internal company quality assurance policy and risk management strategy
  - International Standards Organisation
  - site safety plan
  - workplace operations and procedures
- specifications and operational manuals for:
  - commissioning and testing
  - components installation
  - fittings
  - manufacturer specifications, literature and data
  - materials
  - pumps
  - systems
  - valves.

Specifications may include:

- air-flow requirements
- equipment selection
- fire safety
- jointing
- manufacturer requirements
- materials
- safety (WHS)
- specialised components
- support
- testing
- workmanship.

Plans:

- may include:
  - axonometrics

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- cross-sections
- details
- elevations
- isometrics
- schematics
- sections
- may be produced using:
  - computer generation
  - drawing equipment.

Design and sizing:

- may include designs that are prescriptive and include detail relating to:
  - cost
  - materials and quality of work
  - milestones
  - nominated subcontractors
  - provision of on-site facilities and site access
  - quality assurance
  - space allowances
  - standard procedures
  - work schedules
- design parameters must include:
  - client requirements
  - legislative requirements
  - WHS requirements
  - user requirements in relation to zoning
- design and sizing may be produced using:
  - computer generation
  - drawing equipment
  - with reference to calculations, tables, regulations and manufacturer specifications.

Applications may include:

- amenities
- basement carpark
- food preparation
- residential and commercial premises.

Sustainability principles and

- cover the current and future social, economic and environmental use of resources

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concepts:

- may include:
  - selecting appropriate material to ensure minimal environmental impact
  - efficient use of material
  - efficient energy usage/capital outlay comparison.

Tests and testing equipment must include:

- air pressure
- air velocity
- air volume
- humidity
- Pitot tubes
- sound power levels
- temperature.

Testing may include:

- air flow
- climate control
- defect inspection
- inspection checklist
- performance quality assurance (QA) audit.

Commissioning schedule may include:

- acoustic performance
- balancing
- system certification
- check for foreign material
- leak check
- system defects
- system functions as per design.

Operation and maintenance manual may include:

- as installed drawings
- certification documentation
- results of commissioning test
- maintenance schedules
- manufacturer brochures and technical information
- regular water quality testing
- system operation.

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Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPMS5012A Design sound attenuated hydraulic services

Modification History

Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPMS5002A

Unit Descriptor

This unit of competency specifies the outcomes required to design sound attenuated hydraulic services, determine relevant installation details and prepare specifications for a range of residential, commercial and industrial buildings.

Application of the Unit

This unit of competency supports development of skills and knowledge required for competent workplace performance in a consultancy or supervisory capacity in relation to plumbing services and construction hydraulics.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	Evaluate design parameters.	1.1	***Scope of work*** is established for sound attenuated hydraulic services for wide span and high-rise building projects.
		1.2	***Design requirements*** are determined from relevant Australian standards, codes, plans, specifications and client brief.
		1.3	Sound transmission categories and levels are identified from relevant Acts, codes and standards, and are evaluated for residential, commercial and industrial premises.
		1.4	Sound transmission values of building and structural elements and materials are evaluated.
		1.5	***Cost-benefit analysis*** is conducted comparing a range of pipe materials and system designs.
		1.6	National Construction Code, ***statutory and regulatory requirements and Australian standards*** for the design of sound attenuated hydraulic services are analysed and applied.
		1.7	***Manufacturer requirements*** and trade and technical manuals are interpreted.
		1.8	Factors that contribute to quality, safety and time efficiency are determined.
		1.9	Additional research, including a ***desktop study***, is conducted to outline design parameters.
		1.10	***Performance requirements*** are established, considering safety of system users or building occupants.
2	Plan and detail system components.	2.1	Causes of ***noise generation*** in hydraulic services are identified and analysed.
		2.2	***Layout of*** sound-attenuated ***pipework systems*** is planned.
		2.3	***System calculations*** are performed for a range of sound attenuated hydraulic services.

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		2.4	***Pumped hydraulic systems*** are sound attenuated.
		2.5	***Pipe supports*** are designed for a range of applications.
		2.6	Approved ***materials*** and ***installation requirements*** for sound attenuated hydraulic services are specified.
3	Design and size systems.	3.1	Sound attenuated hydraulic services are designed and sized for a range of applications.
		3.2	***Material combinations*** are identified and documented to achieve sound attenuation requirements.
		3.3	Pump installations are sound attenuated.
		3.4	Sound attenuated hydraulic services are designed and evaluated using calculations and computer software packages.
		3.5	***Sustainability principles and concepts*** are applied throughout the design process.
4	Prepare documentation.	4.1	Client brief of the desired design is prepared.
		4.2	***Plans*** and ***specifications*** are prepared for a range of sound attenuated hydraulic services.
		4.3	Report on sound attenuated hydraulic services for a range of applications is prepared.
		4.4	***Testing*** and ***commissioning schedule*** is prepared.
		4.5	***Operation and maintenance manual*** is produced, including information on how to properly and safely maintain the system.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - communicate with others to ensure safe and effective work practices
  - confirm job specifications and client requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- literacy skills to:
  - prepare written documentation, including:
    - operation and maintenance manual
    - plans, specifications and schedules
  - read and interpret:
    - plans, specifications, drawings and design briefs
    - standards and manufacturer requirements and manuals
    - statutory and regulatory requirements
- initiative and enterprise skills to develop creative and responsive approaches
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and set out work
  - research, collect, organise and understand information relating to the design of sound attenuated hydraulic services
  - take initiative and make decisions
- problem-solving skills to analyse requirements, consider options and design an appropriate system
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
  - determine relevant installation details for sound-attenuated hydraulic services
  - prepare specifications for sound attenuated hydraulic services
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

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Required knowledge

- application of relevant Australian standards and codes, National Construction Code, manufacturer specifications, and other relevant standard operating procedures relevant to the sector
- common terminology and definitions used in the design of sound attenuated hydraulic services for all classes of building
- drafting principles
- nature of materials used and effects of performance under various conditions
- principles of technology in the design of sound attenuated hydraulic services
- work health and safety (WHS) requirements, including relevant statutory regulations, codes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to as a minimum, provide evidence of the ability to:

- design and document the details for sound-attenuated hydraulic services installation, including a specification for a high-rise mixed development building; using an approved sanitary plumbing and domestic drinking water system to a minimum of 29 floors.
- evaluate and document design parameters, to relevant Australian standard and codes, and regulatory, client and manufacturer requirements for a range of sound-attenuated hydraulic services
- components must include:
  - clipping
  - pipe enclosures
  - insulation
  - sound-attenuated pipework
- prepare reports on sound-attenuated hydraulic services for a range of applications
- prepare specifications for a range of sound-attenuated hydraulic services
- prepare testing and commissioning schedules
- apply sustainability principles and concepts throughout the design process
- communicate with others to ensure safe and effective work site operations.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and

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environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace

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- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Scope of work:

- must include:
  - documenting layout of sound attenuated hydraulic services, including reduction of noise transfer for residential, commercial and industrial applications
  - interpreting plans and specifications
- may be for new projects or an existing structure being renovated, extended, restored or maintained.

Design requirements must include:

- architectural plans
- building specifications
- acoustic performance of fixtures, fittings and equipment

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- building construction materials
- fire rating of penetrations
- owner requirements
- pipe enclosures
- pipework identification
- specialist applications.

Cost-benefit analysis:

- compares the range of suitable materials and system choices available to enable cost-effective choices to be made without compromising integrity of project
- may include:
  - design styles
  - energy costs
  - expected design life
  - labour costs
  - material costs
  - safety factors
  - speed of installation
  - suitable materials
  - system choices.

Statutory and regulatory requirements and Australian standards may include:

- Acts, regulations and commonwealth, state or territory, and local government requirements
- National Construction Code
- AS/NZS3500 National plumbing and drainage
- AS2200 Design charts for water supply and sewerage
- other relevant Australian standards.

Manufacturer requirements may include:

- analysis of sound transmission values
- acoustic performance of fixtures, fittings and equipment
- specifications
- technical and trade manuals.

Desktop study may include collection and interpretation of data for design purposes in:

- architectural and building plans
- developer plans
- manufacturer data
- documents, which may include:

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- applications
- brochures
- forms
- policies
- other reports as available.

Performance requirements may include:

- flow, velocity, pressure and discharge requirements established using relevant Australian standards, codes and local government authority plans
- noise rating of habitable areas.

Noise generation must include:

- acoustic performance of fixtures, fittings and equipment
- high velocity
- high pressure
- linking of building compartments by pipework
- loose pipework
- pumped hydraulic systems
- system design
- quick action valves
- water hammer.

Layout of pipework systems:

- must include:
  - concealed pipework
  - pipe enclosures
  - exposed pipework
  - fire-rated pipework
- should have principles of economy, serviceability, durability and fit for use applied
- should not unduly affect building integrity and aesthetic appeal.

System calculations must include:

- sound criteria for habitable rooms
- noise insulation characteristics of materials
- sound transmission values of plumbing pipework and building materials.

Pumped hydraulic systems may include:

- circulating systems
- compressed air systems

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- pressurised water mains
- pump and pump rising mains
- pumproom
- sanitary rising mains
- steam systems.

Pipe supports cover fixings that do not impinge on sound attenuation of the hydraulic service, and may include:

- anchors
- bracket spacing
- hanging brackets
- manufacturer-recommended specific fixings
- material requirements
- provision for expansion
- separation and insulation between pipework, supports and building structure.

Materials may include:

- expanded foam rubber
- glasswool
- rockwool
- lead vinyl
- other approved materials.

Installation requirements:

- may be for:
  - sanitary plumbing
  - drinking and non-drinking water supply
  - alternative water supply
  - stormwater drainage
  - siphonic stormwater systems
  - pumping systems
- must include:
  - fire rating
  - level of workmanship
  - manufacturer installation requirements
  - pipe support
  - serviceability and access.

Material combinations may include:

- pipe enclosures
- floor, wall and ceiling systems
- separation and insulation distances.

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Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient use of material
  - efficient energy usage/capital outlay comparison
  - consideration of the Green Building Council of Australia rating scheme
  - selecting appropriate components to ensure minimal environmental impact.

Plans:

- may include:
  - axonometrics
  - cross-sections
  - details
  - elevations
  - isometrics
  - sections
- schematics, which may be produced using:
  - computer generation
  - drawing equipment.

Specification may include:

- jointing
- manufacturer requirements
- materials
- performance criteria
- safety (WHS)
- selection of suitable acoustic rated fixtures, fittings and equipment
- separation and insulation between pipework, supports and building structure
- support
- workmanship.

Testing may include:

- compliance testing
- quality assurance (QA) audit
- performance
- sound measurement (dB).

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Commissioning schedule must include:

- system certification
- insulation gap filling
- system defects
- system functions as per design.

Operation and maintenance manual may include:

- as installed drawings
- results of commissioning test
- certification documentation
- maintenance schedules
- manufacturer brochures and technical information.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPMS5013A Design hydronic heating and cooling systems

Modification History

Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPMS5003A

Unit Descriptor

This unit of competency specifies the outcomes required to design hydronic heating and cooling systems, determine relevant installation details and prepare system specifications for a range of residential, commercial and industrial buildings.

Application of the Unit

This unit of competency supports development of skills and knowledge required for competent workplace performance in a consultancy or supervisory capacity in relation to plumbing services and hydraulics.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	Evaluate design parameters.	1.1	***Scope of work*** for hydronic heating and cooling systems is established.
		1.2	***Design requirements*** are determined from relevant Australian standards, codes, plans, specifications and client brief.
		1.3	***Cost-benefit analysis*** is conducted comparing a range of pipe materials and system designs.
		1.4	***Statutory and regulatory requirements and relevant Australian standards and codes*** for the design of hydronic heating and cooling systems are analysed and applied.
		1.5	***Manufacturer requirements*** and trade and technical manuals are interpreted.
		1.6	Additional research, including a ***desktop study***, is conducted to outline design parameters.
		1.7	Factors that contribute to quality, safety and time efficiency are determined.
		1.8	***Performance requirements*** are established, considering safety of system users or building occupants.
2	Plan and detail system components.	2.1	***Layout of pipework systems***, and type and location of ***fittings, valves*** and controls are planned.
		2.2	***Pipe size requirement calculations*** are performed for a range of applications according to regulations and manufacturer requirements.
		2.3	***System components and circuits*** are specified.
		2.4	***Pump and compressor systems*** are detailed.
		2.5	Distribution flows, velocities and pressures are specified for a range of applications.
		2.6	***Insulation*** is specified.
		2.7	***Pipe supports*** are designed for a range of applications.

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		2.8	Approved ***materials***, ***jointing methods*** and ***installation requirements*** for hydronic heating and cooling systems are specified.
		2.9	Allowance for expansion and contraction is provided.
3	Design and size systems.	3.1	Hydronic systems and circuits are designed for a range of applications.
		3.2	Hydronic systems are designed and sized using calculations and computer software packages.
		3.3	***Sustainability principles and concepts*** are applied throughout the design process.
4	Prepare documentation.	4.1	Client brief of the desired design is prepared.
		4.2	***Plans*** and ***specifications*** are prepared for a range of hydronic heating and cooling systems.
		4.3	***Testing*** and ***commissioning schedule*** is prepared.
		4.4	***Operation and maintenance manual*** is produced, including information on how to properly and safely maintain the system.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - communicate with others to ensure safe and effective work practices
  - confirm job specifications and client requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
- literacy skills to:
  - prepare written documentation, including:
    - operation and maintenance manual
    - plans, specifications and schedules
  - read and interpret:
    - plans, specifications, drawings and design briefs
    - standards and manufacturer requirements and manuals
    - statutory and regulatory requirements
- initiative and enterprise skills to develop creative and responsive approaches
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and set out work
  - research, collect, organise and understand information relating to the design of hydronic heating and cooling systems
  - take initiative and make decisions
- problem-solving skills to analyse requirements, consider options and design an appropriate system
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
  - determine relevant installation details for hydronic heating and cooling systems
  - prepare system specifications for hydronic heating and cooling systems
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

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Required knowledge

- application of National Construction Code or relevant Australian standards and codes, manufacturer specifications and operating procedures relevant to the sector
- common terminology and definitions used in design of hydronic heating and cooling systems for all classes of building
- drafting principles
- nature of materials used in hydronic heating and cooling systems and effects of performance under various conditions
- principles of technology in the design of hydronic heating and cooling systems
- work health and safety (WHS) requirements, including relevant statutory regulations, codes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to as a minimum, provide evidence of the ability to:

- design, size and document the layout details for a hydronic heating and cooling system, including a specification for a high-rise mixed development building to a minimum of 29 floors, inclusive of a basement to include fixtures on each floor level (fixtures are included in the basement), including:
  - applying sustainability principles and concepts throughout the design to achieve a star rating under the Green Council of Australia rating scheme
  - evaluating and documenting design parameters, including client, regulatory, manufacturer and relevant Australian standard and code requirements for a range of hydronic heating and cooling systems
  - producing an appropriate layout for hydronic heating and cooling systems, planned according to manufacturer and regulatory requirements
  - calculating pipe sizes according to regulations and manufacturer requirements
  - designing hydronic circuits
  - designing and sizing hydronic systems using calculations and appropriate computer software
  - preparing plans and specifications for a range of hydronic heating and cooling systems
  - preparing testing and commissioning schedules
  - producing operation and maintenance manuals
  - communicating with others to ensure safe and

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effective workplace operations.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and

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environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Scope of work:

- must include:
  - interpretation of plans and specifications
  - principles and properties of hydronic systems, including:
    - barriers to heat transfer
    - conduction
    - convection

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- heat transfer
- principles of hydronic circuits
- principles of pressure and energy related to hydronic systems
- properties of water steam and gases used for hydronic systems
- radiation

- hydronic applications, which may include:
  - chiller circuits for air conditioning and refrigeration applications
  - concrete floor heating circuits
  - heat removal applications
  - manufacturing and industrial applications
  - room heating circuits for residential, commercial and industrial heating applications
  - timber floor heating circuits
- sizing and documenting layout of hydronic heating and cooling systems for residential, commercial or industrial applications for either new projects or an existing structure being renovated, extended, restored or maintained.

Design requirements may include:

- architectural plans
- building specifications
- interpretation and application of mechanical services drawings and symbols
- fire rating of penetrations
- owner requirements
- pipework identification
- specialist hydronic applications.

Cost-benefit analysis:

- compares the range of suitable materials and system choices available to enable cost-effective choices to be made without compromising integrity of project
- may include:
  - design styles
  - energy costs
  - expected design life
  - labour costs
  - material costs
  - safety factors

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- speed of installation
- suitable materials
- system choices.

Statutory and regulatory requirements and relevant Australian standards may include:

- Acts, regulations and commonwealth, state or territory, and local government requirements
- industry standards
- National Construction Code
- other relevant Australian standards.

Manufacturer requirements include:

- sizing tables
- specifications
- recommended specific fixings for pipework
- technical and trade manuals.

Desktop study may include collection and interpretation of data for design purposes in:

- architectural and building plans
- developer plans
- manufacturer data
- documents, which may include:
  - applications
  - brochures
  - forms
  - policies
  - other reports as available.

Performance requirements must include:

- hydronic heating and cooling system requirements, including temperature and safety requirements, established using relevant Australian standards, codes and manufacturer information.

Layout of pipework systems:

- must include:
  - flow, velocity, pressure and discharge requirements established using relevant Australian standards, codes and local government authority requirements
  - location of pipework (fire rating of enclosure)
  - compliance with hydronic principles
- should not unduly affect building integrity and aesthetic appeal

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- should have principles of economy, serviceability, durability and fit for use applied.

Fittings and valves may include:

- fittings:
  - bends
  - elbows
  - tees
  - unions
  - couplings
  - strainers
- valves:
  - excess pressure
  - flow and isolating
  - pressure limiting
  - pressure reduction.

Pipe size requirement calculations must include:

- energy
- flow and velocity
- pressure
- sizing
- temperature
- volume and storage.

System components and circuits:

- boilers may include:
  - advantages and disadvantages of boiler types
  - capacity and size
  - coal
  - electric
  - energy sources
  - fire tube
  - gas
  - heat exchanger
  - methods of reducing heat losses
  - oil
  - packaged
  - pressure controls and components
  - solid fuel
  - valves
  - water tube

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- factors to be considered when selecting a boiler hydronic circuit must include:
  - circulating pump appliances
  - flow and return pipework
  - pipework grades
  - valves and fittings
- cooling towers must include:
  - bacteriological safety
  - collection
  - construction
  - disinfection
  - fans
  - maintenance
  - size
  - sprays
- chillers and refrigerant plant must include:
  - engineered systems
  - packaged plants
  - proprietary commercial and industrial equipment and assemblies
- hydronic appliances must include:
  - calorifiers
  - components
  - concrete construction
  - electronic controls
  - heat exchangers
  - methods of temperature and pressure control
  - radiators
  - timber floor heating systems
  - types
  - water heaters.

Pump and compressor systems must include:

- chilled water pumps
- circulating pumps
- refrigeration compressors
- other applications as required.

Insulation may include:

- felt
- fibreglass

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- insulation protection, including:
  - plastic
  - sheet metal
- rock wool.

Pipe supports may include:

- anchors
- bracket spacing
- corrosion protection
- hanging brackets
- manufacturer-recommended specific fixings
- material requirements
- provision for expansion
- saddles.

Materials may include:

- copper (Cu)
- steel
- other approved materials.

Jointing methods may include:

- brazing
- mechanical joints
- threading
- other approved jointing methods.

Installation requirements may include:

- pipe protection, which may include:
  - cover
  - corrosion
  - impact
- fire rating
- level of workmanship
- manufacturer-recommended specific fixings
- pipe support
- provision for expansion
- serviceability and access.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient use of material

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- efficient energy use/capital outlay comparison
- water efficiency
- reuse of water, such as rainwater, greywater and recycled non-drinking water
- consideration of the Green Building Council of Australia rating scheme
- selecting appropriate components to ensure minimal environmental impact.

Plans:

- may include:
  - axonometrics
  - cross-sections
  - details
  - elevations
  - isometrics
  - sections
- schematics, which may be produced using:
  - computer generation
  - drawing equipment.

Specification may include:

- bedding
- support
- flow requirements
- jointing
- manufacturer requirements
- materials
- residual pressures
- safety (WHS)
- specialised components
- testing
- valve selection
- water treatment
- workmanship.

Testing may include:

- defect inspection
- flow testing
- inspection checklist
- leak testing
- pressure testing
- quality assurance (QA) audit.

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Commissioning schedule must include:

- system certification
- flue balancing
- flow test
- leak check
- pressure test
- system purge
- system defects
- system functions as per design
- valve operation
- checking fit for purpose
- removing contaminants.

Operation and maintenance manual may include:

- as installed drawings
- certification documentation
- check for blockages
- leak detection
- maintenance schedules
- manufacturer brochures and technical information
- regular inspection
- regular maintenance requirements.
- results of commissioning test
- valve function.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPPS5000B Design gas bulk storage systems

Modification History

Minor changes throughout the unit
Equivalent to CPCPPS5000A

Unit Descriptor

This unit of competency specifies the outcomes required to design gas bulk storage systems, determine relevant installation details and prepare system specifications for a range of residential, commercial and industrial buildings.

Application of the Unit

This unit of competency supports the development of skills and knowledge required for competent workplace performance in a consultancy or supervisory capacity in relation to plumbing services and hydraulics.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	Evaluate design parameters.	1.1	***Scope of work*** for gas bulk storage systems is established.
		1.2	***Design requirements*** are determined from plans, specifications and client brief.
		1.3	***Cost-benefit analysis*** is conducted comparing a range of pipe materials and system designs.
		1.4	***Statutory and regulatory requirements and Australian and New Zealand standards*** for the design of gas bulk storage systems are analysed and applied.
		1.5	***Manufacturer requirements*** and trade and technical manuals are interpreted.
		1.6	Additional research, including a ***desktop study***, is conducted to outline design parameters.
		1.7	***Performance requirements*** are established.
2	Plan and detail system components.	2.1	Layout of a liquefied petroleum gas (LPG) bulk storage installation is determined according to regulatory authorities.
		2.2	Site plans for bulk installations are prepared, including ***layout of pipework systems***.
		2.3	Fire protection systems are specified according to Australian and New Zealand standards and deluge systems are detailed.
		2.4	***Control valves and fittings*** are designed and detailed.
		2.5	Content gauges are analysed and located according to code requirements, and ***meters*** and regulators are specified.
		2.6	Vaporisers are evaluated and specified and vaporisation rates are calculated.
		2.7	***System calculations*** are performed for a range of applications according to regulations and manufacturer requirements.

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		2.8	***Pipe fixings*** are designed for a range of applications.
		2.9	Approved ***materials***, ***jointing methods*** and ***installation requirements*** for gas bulk storage systems are specified.
3	Design and size systems.	3.1	Gas bulk storage systems and circuits are designed for a range of applications.
		3.2	Deluge systems are designed.
		3.3	Gas bulk storage systems are designed and sized using computer software packages.
4	Prepare documentation.	4.1	***Plans*** are prepared for a range of gas bulk storage systems.
		4.2	***Specification*** for a gas bulk storage system is prepared.
		4.3	***Testing*** and ***commissioning schedule*** is prepared.
		4.4	***Operation and maintenance manual*** is produced.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - communicate with others to ensure safe and effective work practices
  - confirm job specifications and client requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- literacy skills to:
  - prepare written documentation, including:
    - operation and maintenance manual
    - plans, specifications and schedules
  - read and interpret:
    - documentation from a variety of sources
    - standards and manufacturer requirements and manuals
    - plans, specifications, drawings and design briefs
    - statutory and regulatory requirements
- initiative and enterprise skills to develop creative and responsive approaches
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - research, collect, organise and understand information relating to the design of gas bulk storage systems
  - take initiative and make decisions
- problem-solving skills to analyse requirements, consider options and design an appropriate system
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
  - determine relevant gas storage installation details
  - prepare gas storage system specifications

Required knowledge

- common terminology and definitions used in design of gas bulk storage systems for all

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classes of building
- drafting principles
- nature of materials used and effects of performance under various conditions
- principles of technology in the design of gas bulk storage systems
- requirements of state regulatory authorities, Australian standards and manufacturer specifications, including hazards identified in relation to devices and systems used
- workplace safety requirements, including relevant statutory regulations, codes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- evaluating and documenting design parameters, including client, regulatory, manufacturer and Australian and New Zealand standard requirements for a range of gas bulk storage systems
- planning and detailing system components, including:
  - meters
  - pipes
  - regulators
  - valves
  - vaporisers
- designing a deluge system
- designing and sizing gas bulk storage systems using appropriate software
- preparing plans for a range of gas bulk storage systems to industry standards
- preparing specifications for gas bulk storage system installations
- preparing testing and commissioning schedules
- producing operation and maintenance manuals.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or

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Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices and relevant to planning processes, including calculators
- support materials appropriate to activity, including computers and software
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at

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different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Scope of work includes:

- interpretation of plans and specifications
- principles of operation of various types of LPG components and fault conditions in LPG components
- sizing and documenting layout of gas bulk storage installations, including fire protection systems, such as:
- chemical injection
- extinguishers
- hose reels
- hydrants
- monitors
- portable and fixed types of firefighting equipment
- spray systems.

Design requirements must include:

- architectural specifications
- builder specifications

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	• owner requirements • specialist gas use applications.
Cost-benefit analysis:	• compares the range of suitable materials and system choices available to enable cost-effective choices to be made without compromising integrity of project.
Statutory and regulatory requirements and Australian and New Zealand standards must include:	• Acts, regulations and local and state government policies, including group and strata titling • AS/NZS1596 The storage and handling of LP gas • AS2430 Classification of hazardous areas • AS5601 (AG601) Gas installations • National Construction Code.
Manufacturer requirements include:	• pump tables • sizing tables • specifications • technical and trade manuals.

Desktop study includes collection and interpretation of existing data for design purposes in:	• architectural and building plans
	• council plans
	• developer plans
	• other documents, including:
	  • applications
	  • forms
	  • other reports as available.

Performance requirements must include:	• operational and safety requirements, established using Australian and New Zealand standards, and local and state authority plans.
Layout of pipework systems must:	• not unduly affect building integrity and aesthetic appeal • have principles of economy, serviceability, durability and fit for use applied.
Control valves and fittings may include:	• valves: • applications of valves and code requirements for

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installation
  - emergency shutdown valves
  - excess flow valves
  - hydrostatic relief valves
  - individual valve types
- fittings:
  - bends
  - inspection openings
  - junctions
  - meters
  - reflux valves
  - staged regulators
  - traps
  - vaporisers.

Meters include:

- mass flow
- positive displacement
- turbine.

System calculations must include:

- determination of flow and appliance loadings
- interpretation of design charts and tables
- pipe sizing calculations.

Pipe fixings include:

- anchors
- bedding
- bracket spacing
- concrete support
- corrosion protection
- cover
- hanging brackets
- material requirements
- saddles
- wall and ceiling brackets.

Materials include:

- concrete
- copper
- fittings and valves
- high density polyethylene (HDPE)
- measures to prevent the spread of fire.

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Jointing methods include:

- brazing
- mechanical joints
- solvent cement welding
- threading.

Installation requirements include:

- bedding
- clipping
- concrete support
- installation details
- jointing requirements
- level of workmanship.

Plans include:

- axonometrics
- cross-sections
- details
- elevations
- isometrics
- schematics, which may be produced using:
  - computer generation
  - drawing equipment
- sections.

Specification includes:

- clipping
- details of specialised components
- jointing
- manufacturer requirements
- materials
- valves
- workmanship.

Testing includes:

- air pressure test
- gas leak test
- quality assurance (QA) audit.

Commissioning schedule must include:

- flow testing
- leak check
- vaporisation rate check.

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Operation and maintenance manual may include:

- leak detection
- regular maintenance requirements
- safety inspection
- yearly inspection.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPPS5001B Design industrial gas systems

Modification History

Minor changes throughout the unit
Equivalent to CPCPPS5001A

Unit Descriptor

This unit of competency specifies the outcomes required to design industrial gas systems in compliance with Industrial Equipment Code (IEC) requirements, including the design of valve trains, interlocks, pipework and equipment.

Application of the Unit

This unit of competency supports development of skills and knowledge required for competent workplace performance in a consultancy or supervisory capacity in relation to plumbing services and hydraulics.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	Evaluate design parameters.	1.1	***Scope of work*** for industrial gas systems is established.
		1.2	***Design requirements*** are determined from plans, specifications and client brief.
		1.3	***Cost-benefit analysis*** is conducted comparing a range of pipe materials and system designs.
		1.4	***Statutory and regulatory requirements, codes and Australian and New Zealand standards*** for the design of industrial gas systems are analysed and applied.
		1.5	***Manufacturer requirements*** and trade and technical manuals are interpreted.
		1.6	Additional research, including a ***desktop study***, is conducted to outline design parameters.
		1.7	Factors that contribute to quality, safety and time efficiency are determined.
		1.8	***Performance requirements*** are established.
2	Plan and detail system components.	2.1	***Layout of pipework systems*** and type and location of ***fittings and valves*** are planned.
		2.2	***Valve trains*** are designed and specified for a range of industrial gas installations.
		2.3	Interlocks and accessories are designed and detailed and components are analysed, selected and located.
		2.4	Methods for protection from harsh environments, heat and vibration and combustion air systems are selected.
		2.5	Air systems, appliances, closed loop systems, and burner systems and controls are detailed and specified.
		2.6	Remote filling systems and pipework are detailed for a given installation and designed according to the IEC.
		2.7	***System calculations*** are performed for a range of industrial gas installations.
		2.8	Approved ***materials***, ***jointing methods***, ***pipe fixings*** and

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			installation requirements for industrial gas systems are specified.
3	Design and size systems.	3.1	Industrial gas systems are designed for a range of applications.
		3.2	Industrial gas systems are designed and sized using computer software packages.
4	Prepare documentation.	4.1	***Plans*** are prepared for a range of industrial gas systems.
		4.2	***Specification*** for an industrial gas system is prepared.
		4.3	***Testing*** and ***commissioning schedule*** is prepared.
		4.4	***Operation and maintenance manual*** is produced.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - communicate with others to ensure safe and effective work practices
  - confirm job specifications and client requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- literacy skills to:
  - prepare documentation, including:
    - operation and maintenance manual
    - plans, specifications and schedules
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications, drawings and design briefs
    - standards and manufacturer requirements and manuals
    - statutory and regulatory requirements
- initiative and enterprise skills to develop creative and responsive approaches
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - research, collect, organise and understand information relating to the design of industrial gas systems
  - take initiative and make decisions
- problem-solving skills to analyse requirements, consider options and design an appropriate system
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to design industrial gas systems and components in compliance with IEC requirements

Required knowledge

- application of:
  - Australian standards, including AS5601 (AG601) Gas installations
  - manufacturer specifications, including hazards identified in relation to devices and

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systems used
  - other codes or standard operating procedures
  - state regulatory authorities' requirements
- common terminology and definitions used in the design of industrial gas systems
- principles of technology in the design of industrial gas systems
- workplace safety requirements, including relevant statutory regulations, codes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

- This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

- A person who demonstrates competency in this unit must be able to provide evidence of:
  - evaluating and documenting design parameters, including:
  - client
  - Gas Act 1965 and amendments
  - manufacturer and Australian and New Zealand standard requirements for a range of industrial gas systems
  - regulatory
- planning and detailing system components, including:
  - burners
  - controls
  - regulators
- designing and sizing industrial gas systems
- preparing plans for a range of industrial gas systems to industry standards
- preparing specifications for industrial gas systems
- preparing testing and commissioning schedules
- producing operation and maintenance manuals.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or

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Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions, including design brief drawings, specifications, codes, design concepts and construction schedules
- tools and equipment appropriate to applying safe work practices, including computers, software and calculators
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at

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different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Scope of work must include:

- interpreting plans and specifications
- sizing and documenting layout of industrial gas systems for applications, including:
  - characteristics
  - compatibility
  - dimensions
  - location
  - patterns
  - quantities
  - sizes
  - surfaces
  - types of product and service.

Design requirements must include:

- architectural specifications
- builder specifications

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	• owner requirements • specialist use applications.
Cost-benefit analysis:	• compares the range of suitable materials and system choices available to enable cost-effective choices to be made without compromising integrity of project.
Statutory, regulatory requirements, codes and Australian and New Zealand standards include:	• Acts, regulations and local and state government policies, including group and strata titling • AS/NZS1596 The storage and handling of LP gas • AS5601 (AG601) Gas installations • Gas Act 1965 and amendments • gas regulations • National Construction Code • other Australian and New Zealand standards.
Manufacturer requirements include:	• material specifications • pump tables • sizing tables • technical and trade manuals.

Desktop study includes collection and interpretation of existing data for design purposes in:	• architectural and building plans
	• council plans
	• developer plans
	• other documents, including:
	  • forms
	  • applications
	  • other reports as available.

Performance requirements include:	• pipe grades, cover, flow conditions and discharge requirements, established using Australian and New Zealand standards and local authority plans.
Layout of pipework systems must:	• have principles of economy, serviceability, durability and fit for use applied • not unduly affect building integrity and aesthetic appeal.

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Fittings and valves include:

- meters
- regulators
- relief valves.

Valve trains must include:

- analysing the operation of valve components
- sizing and selecting components using manufacturer data.

System calculations must include:

- calculation of explosion relief
- calculation of purge times
- determination of flow and consumption
- interpretation of design charts and tables
- pipe sizing calculations.

Materials include:

- copper (Cu)
- fittings and appliances, including measures to prevent the spread of fire
- high density polyethylene (HDPE).

Jointing methods include:

- brazing
- gluing
- mechanical joints
- solvent cement welding
- threading.

Pipe fixings include:

- anchors
- bracket spacing
- corrosion protection
- hanging brackets
- material requirements
- saddles
- wall and ceiling brackets.

Installation requirements include:

- clipping
- installation details
- jointing requirements
- level of workmanship.

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Plans include:

- axonometrics
- cross-sections
- details
- elevations
- isometrics
- schematics, which may be produced using:
  - computer generation
  - drawing equipment
- sections.

Specification includes:

- clipping
- details of specialised components
- jointing
- manufacturer requirements
- materials
- valves
- workmanship.

Testing includes:

- air pressure test
- gas leak test
- quality assurance (QA) audit.

Commissioning schedule must include:

- flow testing
- leak check
- vaporisation rate check.

Operation and maintenance manual may include:

- leak detection
- regular maintenance requirements
- safety inspection
- yearly inspection.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

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Custom Content Section

Not applicable.

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CPCPPS5002B Design gas reticulation systems

Modification History

Minor changes throughout the unit
Equivalent to CPCPPS5002A

Unit Descriptor

This unit of competency specifies the outcomes required to design and size gas reticulation systems, including determining material, placement and ventilation requirements.
The unit also covers the analysis and interpretation of relevant gas codes and standards, the preparation of documentation for testing and commissioning, and testing for safe operation.

Application of the Unit

This unit of competency supports development of skills and knowledge required for competent workplace performance in a consultancy or supervisory capacity in relation to plumbing services and hydraulics.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	Evaluate design parameters.	1.1	***Scope of work*** for gas reticulation systems is established.
		1.2	***Design requirements*** are determined from plans, specifications and client brief.
		1.3	***Cost-benefit analysis*** is conducted comparing a range of pipe materials and system designs.
		1.4	***Statutory and regulatory requirements and Australian and New Zealand standards*** for the design of gas reticulation systems are analysed and applied.
		1.5	***Manufacturer requirements*** and trade and technical manuals are interpreted.
		1.6	Additional research, including a ***desktop study***, is conducted to outline design parameters.
		1.7	Performance requirements are established.
2	Plan and detail system components.	2.1	***Layout of pipework systems*** and type and location of ***fittings and valves*** are planned.
		2.2	Pipe sizes are ***calculated*** for a range of applications.
		2.3	***Ventilation and flue requirements*** are specified for a range of applications.
		2.4	Gas metering and measurement of gas consumption are conducted.
		2.5	Distribution pressures and ***specifications of regulators and appliances*** are detailed for a range of applications.
		2.6	***Cylinder and tank systems are designed*** and detailed.
		2.7	Safety, ignition, thermostat and gas control devices are specified in compliance with relevant standards and codes.
		2.8	***Pipe fixings*** are designed for a range of applications.
		2.9	Approved ***materials***, ***jointing methods*** and ***installation requirements*** for gas reticulation systems are specified.

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3	Design and size systems.	3.1	Gas reticulation systems are designed for a range of applications.
		3.2	Gas reticulation systems are designed and sized using computer software packages.
4	Prepare documentation.	4.1	***Plans*** are prepared for a range of gas reticulation systems.
		4.2	***Specification*** for a gas reticulation system is prepared.
		4.3	***Testing*** and ***commissioning schedule*** is prepared.
		4.4	***Operation and maintenance manual*** is produced.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- analysing and interpreting relevant gas codes and standards
- communication skills to:
  - communicate with others to ensure safe and effective work practices
  - confirm job specifications and client requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to develop creative and responsive approaches
- literacy skills to:
  - prepare documentation, including:
    - operation and maintenance manual
    - plans, specifications and schedules
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications, drawings and design briefs
    - standards and manufacturer requirements and manuals
    - statutory and regulatory requirements
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - research, collect, organise and understand information relating to the design of gas reticulation systems
  - take initiative and make decisions
- problem-solving skills to analyse requirements, consider options and design an appropriate system
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
  - determine material, placement and ventilation requirements for a gas reticulation system
  - prepare documentation for testing and commissioning a gas reticulation system
  - test a gas reticulation system for safe operation

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Required knowledge

- common terminology and definitions used in design of gas reticulation systems for all classes of building
- principles of technology used in design of gas reticulation systems
- requirements of state regulatory authorities, Australian standards and manufacturer specifications, including hazards identified in relation to devices and systems used
- workplace safety requirements, including relevant statutory regulations, codes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- evaluating and documenting design parameters, including client, regulatory, manufacturer and Australian and New Zealand standard requirements for a range of gas reticulation systems
- producing an appropriate layout for gas reticulation systems planned according to manufacturer and regulatory requirements
- calculating pipe sizes according to regulations and manufacturer requirements
- designing and sizing gas reticulation systems using appropriate software
- preparing plans for a range of gas reticulation systems
- preparing specifications for gas reticulation systems
- preparing testing and commissioning schedules
- producing operation and maintenance manuals.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the

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minimum task requirements

- relevant specifications and work instructions, including design brief drawings, specifications, codes, design concepts and construction schedules
- tools and equipment appropriate to applying safe work practices, including computers, software and calculators
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

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- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Scope of work:

- must include:
  - interpretation of plans and specifications
  - sizing and documenting layout of gas reticulation systems for applications, including residential, commercial and industrial
  - may be for new projects or an existing structure being renovated, extended, restored or maintained.

Design requirements must include:

- architectural specifications
- builder specifications
- owner requirements
- specialist use applications.

Cost-benefit analysis:

- compares the range of suitable materials and system choices available to enable cost-effective choices to be made without compromising integrity of project.

Statutory and regulatory

- Acts, regulations and local and state government

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requirements and Australian and New Zealand standards include:	policies, including group and strata titling • AS/NZS1596 The storage and handling of LP gas • AS5601 (AG601) Gas installations • Gas Act 1965 and amendments • gas regulations • gas utility and supplier information and requirements • industry standards • manufacturer requirements • National Construction Code.
Manufacturer requirements include:	• material specifications • pump tables • sizing tables • technical and trade manuals.

Desktop study includes collection and interpretation of existing data for design purposes in:	• architectural and building plans
	• council plans
	• developer plans
	• other documents, including:
	  • applications
	  • forms
	  • other reports as available.

Layout of pipework systems must:	• have principles of economy, serviceability, durability and fit for use applied • not unduly affect building integrity and aesthetic appeal.
Fittings and valves include:	• bends • couplings • regulators • tees • unions.
Calculations must include:	• energy • gas volume • pressure • sizing

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- storage.

Ventilation and flue requirements must include:

- appliance flue design and ventilation requirements according to standards, regulations and gas authorities' requirements.

Specifications of regulators include:

- adjustment procedures of regulators
- excessive pressure protection types of regulators
- gas regulation method
- identification, analysis and documentation of regulator faults
- principles of operation
- selection and installation requirements
- sizing of regulators
- types of gas regulators.

Specifications of appliances include:

- commercial appliances
- components
- construction of the appliance
- domestic appliance design
- electronic controls
- industrial appliances.

Design of cylinder and tank systems is based on:

- anticipated use
- appropriate time period between refilling
- gas storage requirements calculations.

Pipe fixings include:

- anchors
- bracket spacing
- corrosion protection
- cover
- hanging brackets
- material requirements
- saddles
- wall and ceiling brackets.

Materials include:

- copper (Cu)
- fittings and fixtures
- galvanised steel

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- polyethylene (PE)
- unplasticised polyvinyl chloride (PVC-U).

Jointing methods include:

- brazing and threading
- gluing
- mechanical joints
- rubber ring
- solvent cement welding.

Installation requirements include:

- clipping, bedding and installation detail
- installation requirements for mobile, marine installation and portable appliances (high and low-pressure)
- jointing requirements
- level of workmanship.

Plans include:

- axonometrics
- cross-sections
- details
- elevations
- isometrics
- schematics, which may be produced using:
  - computer generation
  - drawing equipment
- sections.

Specification includes:

- appliances
- bedding
- clipping
- details of specialised components
- jointing
- manufacturer requirements
- materials
- valves
- workmanship.

Testing includes:

- bubble leak testing
- electronic gas leak detection
- flow testing

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- inspection checklist
- pressure testing
- quality assurance (QA) audit.

Commissioning schedule must include:

- checking for burrs and obstructions
- commissioning appliances
- confirming fit for purpose
- purging system
- removing contaminants.

Operation and maintenance manual includes:

- check for blockages
- leak detection
- regular inspection
- regular maintenance requirements.

Unit Sector(s)

Functional area

Unit sector	Plumbing and services

Custom Content Section

Not applicable.

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CPCPPS5009B Analyse and report on technical plumbing systems

Modification History

Minor changes throughout the unit
Equivalent to CPCPPS5009A

Unit Descriptor

This unit of competency specifies the outcomes required to analyse and report on technical aspects of plumbing systems. It entails analysis of plumbing systems, processes, legislation, practices, materials, installation methods, and safety procedures and impacts. It covers the preparation and publishing of plumbing and services technical reports.

Application of the Unit

This unit of competency supports development of skills and knowledge required for competent workplace performance in a consultancy or supervisory capacity in relation to plumbing services and hydraulics.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	**Select and analyse a plumbing system or aspect of a plumbing system.**	1.1	***Plumbing system*** or ***aspect of a plumbing system*** is selected with a view to improve or better understand the system or aspect of the system.
		1.2	Detailed and comprehensive ***analysis*** is made of the plumbing and hydraulic system or aspect of the system and impacts are identified and documented.
2	**Research and trial the system.**	2.1	Appropriate comprehensive ***literature review and research*** are undertaken.
		2.2	Alternative solutions are trialled and evaluated for suitability.
		2.3	Results from ***evaluations*** are documented.
3	**Evaluate and report on the system or aspect of the system.**	3.1	System or aspect of the system is evaluated, identifying ***alternatives and redundancies***.
		3.2	***Conclusions*** are drawn and changes ***recommended***.
		3.3	Comprehensive and professional ***report*** is produced.
		3.4	Report is ***published*** to increase the body of knowledge within the plumbing and hydraulic field.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - communicate with others to ensure safe and effective work practices
  - confirm job specifications and client requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- literacy skills to:
  - prepare documentation, including:
    - operation and maintenance manual
    - plans, specifications and schedules
  - read and interpret:
    - plans, specifications, drawings and design briefs
    - standards and manufacturer requirements and manuals
    - statutory and regulatory requirements
- planning and organising skills to collect, organise and analyse information
- problem-solving skills to analyse information and check integrity of data
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
  - carry out research to develop own learning and capabilities in relevant field of plumbing and hydraulics
  - identify hazards, including identifying hazard categories according to Australian and New Zealand standards, legislation and manufacturer specifications
- technology skills to use technology and the internet to identify and access relevant information

Required knowledge

- design principles relating to performance of plumbing systems and their components
- plumbing systems, including plumbing system components and impact of various components
- workplace and equipment safety requirements, including relevant statutory regulations, codes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- analysing and evaluating plumbing systems
- trialling and evaluating alternative solutions
- complying with WHS regulations applicable to workplace operations
- applying organisational quality procedures and processes within context of analysing and reporting on technical plumbing systems
- writing a report to professional standards
- making appropriate supported recommendations
- using appropriate techniques to publish reports
- communicating with others to ensure safe and effective work site operations.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions, including design brief drawings, specifications, codes, design concepts and construction schedules

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- tools and equipment appropriate to applying safe work practices, including computers, software and calculators
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as

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is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Plumbing system may include:

- air conditioning
- compressed air
- hose reels
- hydrants
- roofing
- sanitary plumbing and drainage
- sprinklers
- steam
- stormwater
- trade waste
- ventilation
- wastewater
- water supply.

Aspect of a plumbing system may include:

- backflow prevention
- flows
- materials
- solar heating
- trapping
- valves
- ventilation
- water heating.

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Analysis may include:

- durability, longevity and practicality
- health issues and concerns
- impacts, including:
  - environmental
  - financial
  - health
  - personal
  - system processes or aspect of the system
- legislation
- materials
- needs or desired outcomes
- practices and work or installation methods
- safety systems and practices
- sustainability.

Literature review and research may include:

- industry personnel
- internet
- journals
- legislation and standards
- manufacturers' literature
- textbooks
- trade publications.

Evaluations should:

- draw together key aspects of the project
- identify interrelationships of elements identified through the analysis.

Alternatives and redundancies may include:

- changes in community expectations
- changes in legislation
- duplication of tasks and processes
- new work practices
- outdated practices and systems, for example systems and processes replaced by new technologies.

Conclusions may be drawn:

- on any or all aspects of the project but must be supported by analysis and research.

Recommendations should point to

- changes in materials to reduce impacts on cost,

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future directions and may include:	health, safety and the environment • changes in work practices • deletion of old systems and procedures • legislation changes • new systems and procedures.

Report:	• should cover:
	  • outline of the project
	  • research and literature review
	  • analysis
	  • evaluation
	  • alternative solutions
	  • conclusions
	  • recommendations
	• may be in any recognised and professional format
	• must be appropriately referenced.

Report may be ***published***:	• in journals • in textbooks • in trade publications • on the internet.

Unit Sector(s)

Functional area

Unit sector	Plumbing and services

Custom Content Section

Not applicable.

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CPCPPS5011B Coordinate services and penetrations within a building

Modification History

Minor changes throughout the unit
Equivalent to CPCPPS5011A

Unit Descriptor

This unit of competency specifies the outcomes required to coordinate services and penetrations within a building to minimise clashes with work on other building services and to ensure structural integrity.

Application of the Unit

This unit of competency supports development of fundamental skills and knowledge required for competent workplace performance in a consultancy, business or supervisory capacity in relation to plumbing services and construction hydraulics.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	**Evaluate structural, architectural and mechanical services drawings.**	1.1	***Plans***, elevations and sections are evaluated.
		1.2	Multidisciplinary terminology is applied.
		1.3	***Service components*** are located.
		1.4	Cast-in services are identified and located.
2	**Overlay plans to ensure feasibility of building the service.**	2.1	Reduced levels are checked to ensure compliance.
		2.2	Drawings are overlayed to check for ***building services*** and building element clashes.
		2.3	Service clashes are identified and rectified by design modification liaising with consultants.
3	**Coordinate penetrations.**	3.1	Product specifications, architectural finishes and structural elements are used to position penetrations.
		3.2	Design modifications are made to ensure compliance.
		3.3	Plans and documentation are updated to reflect design modifications.
4	**Prepare a duct and penetration plan.**	4.1	***Duct*** and penetration information is collated.
		4.2	***Duct and penetration plan*** is prepared for a complex building project.
		4.3	Maintenance access and testing provisions are located.

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5	**Coordinate fire services and emergency exit requirements.**	5.1	Penetrations are positioned within ducts.
		5.2	Landing valve ***penetrations are positioned*** to ensure regulatory requirements are met.
		5.3	Required clearances in fire-isolated stairways are not obstructed by fire services.
		5.4	Hose reels are located to comply with regulatory requirements.
6	**Compile checklists for checking quality and legislative conformity of design and drafting.**	6.1	Checklists for drafting quality and conformity with sketch designs and legislative requirements are developed.
		6.2	Checklists for checking design and conformity with legislation are developed.
		6.3	Checklists are developed to ensure correlation between drawings and specifications.
		6.4	Checklists are developed to ensure on-site supervision with regards to checking that installation is according to design and specifications.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - communicate with others to ensure safe and effective work practices
  - confirm job specifications and client requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- literacy skills to:
  - read and interpret:
    - plans, specifications, drawings and design briefs
    - standards and manufacturer requirements and manuals
    - statutory and regulatory requirements
  - prepare written documentation, including:
    - operation and maintenance manual
    - plans, specifications and schedules
- numeracy skills to apply measurements and calculations
- planning and organising skills to coordinate, plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
  - coordinate services and penetrations in a building to minimise clashes with work on other building services
  - draw accurate plans and develop specification lists
  - ensure structural integrity of a building

Required knowledge

- process of applying technical knowledge, including drafting principles and understanding of services
- workplace safety requirements, including relevant statutory regulations, codes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- coordinating hydraulic service plans to ensure compliance and resolution of clashes
- selecting and applying appropriate techniques to prepare a penetration plan for a complex building project
- complying with WHS regulations applicable to workplace operations
- applying organisational quality procedures and processes
- preparing detailed drawings for service risers
- preparing elevation and plan details for sanitary stack connections within the duct
- preparing a detailed drawing of a service penetrating a beam
- preparing checklists for use in coordinating services
- communicating with others to ensure safe and effective work site operations.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement

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- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions, including design brief drawings, specifications, codes, design concepts and construction schedules
- tools and equipment appropriate to applying safe work practices, including computers, software and calculators
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's

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demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Plans may include:
- architectural and base building plans
- interpretation of building services
- specifications for an appropriate building.

Service components include:
- beams
- lights
- mechanical
- registers
- ventilating.

Building services include:
- air conditioning
- data and communications
- electrical
- fire
- gas
- hot and cold water supply
- mechanical
- sanitary plumbing and drainage

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- stormwater
- trade waste
- ventilation.

Ducts and positioning may be affected by:

- building stress zones
- clearances
- other services
- positioning of reinforcing steel
- pre and post-tensioning bars
- regulatory requirements
- required services location
- slab thickenings.

Duct and penetration plan may include:

- cast-in pipework
- detail drawings of duct layout beam penetrations
- floor plan showing all ducts and penetrations
- highlighted potential problem areas or building set-out elements
- scale dimensions and sizes for all ducts and penetrations to gridlines.

Penetrations are positioned to take into account:

- branches
- fire collars and their operation
- junction
- other services to fit within the duct.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPPS5014A Locate and maintain piping systems

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to specify procedures to locate and maintain piping systems. The unit requires a range of applications, including pipefreezing equipment and procedures, sewer and drain camera equipment and procedures, under-road boring equipment and procedures, robotic sewer repair, chemical grout systems and procedures, and high-pressure drain cleaning equipment and procedures.

Application of the Unit

Application of the unit This unit of competency supports development of skills and knowledge required for competent workplace performance in a consultancy or supervisory capacity in relation to plumbing services and hydraulics.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Specify pipe and service locating equipment and procedures.	1.1. ***Applications for pipe and service locating equipment*** are specified. 1.2. Pipe and service ***locating equipment*** is specified for specific applications. 1.3. ***Operating procedures*** are specified for the selected equipment. 1.4. ***Safety procedures*** are specified for the selected equipment.
2. Specify pipe-freezing equipment and procedures.	2.1. Applications for ***pipe-freezing equipment*** are specified. 2.2. Pipe-freezing equipment is specified for specific applications. 2.3. Operating procedures are specified for the selected equipment. 2.4. Safety procedures are specified for the selected equipment.
3. Specify sewer and drain camera equipment and procedures.	3.1. Applications for ***sewer and drain camera*** equipment are specified. 3.2. Sewer and drain camera equipment is specified for specific applications. 3.3. Operating procedures are specified for the selected equipment. 3.4. Safety procedures are specified for the selected equipment.
4. Specify under-road boring equipment and procedures.	4.1. Applications for ***under-road boring equipment*** are specified. 4.2. Under-road boring equipment is specified for specific applications. 4.3. Operating procedures are specified for the selected equipment. 4.4. Safety procedures are specified for the selected equipment.
5. Specify robotic sewer repair and chemical grout systems and procedures.	5.1. Applications for robotic sewer repair and chemical grout systems are specified. 5.2. ***Robotic sewer repair and chemical grout systems*** are specified for specific applications. 5.3. ***Trenchless pipe repair systems*** are specified for specific applications. 5.4. Operating procedures are specified for the selected

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ELEMENT	PERFORMANCE CRITERIA
	equipment. 5.5. Safety procedures are specified for the selected equipment.
6. Specify high-pressure drain cleaning equipment and procedures.	6.1. Applications for ***high-pressure drain cleaning equipment*** are specified. 6.2. High-pressure drain cleaning equipment is specified for specific applications. 6.3. Operating procedures are specified for the selected equipment. 6.4. Safety procedures are specified for the selected equipment.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - confirm job specifications and client requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret drawings, specifications and documentation from a variety of sources
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- maintaining piping systems
- numeracy skills to apply measurements and calculations
- organisational skills, including the ability to plan and set out work
- specifying procedures to locate piping systems
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities.

Required knowledge

Required knowledge for this unit is:

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REQUIRED SKILLS AND KNOWLEDGE

- common terminology and definitions used in the specification of piping system maintenance procedures
- nature of materials used and effects of performance under various conditions
- principles of technology in the specification of piping system maintenance procedures
- requirements of state regulatory authorities, Australian standards and manufacturer specifications, including hazards identified in relation to devices and systems used
- workplace safety requirements, including relevant statutory regulations, codes and standards.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of: • specifying equipment and procedures to be used for the location of pipes and services • specifying pipe-freezing equipment and procedures • specifying sewer and drain camera equipment and procedures • specifying under-road boring equipment and procedures • specifying robotic sewer repair and chemical grout systems and procedures • specifying high-pressure drain cleaning equipment and procedures.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the minimum task requirements • relevant specifications and work instructions, including design brief drawings, specifications, codes, design concepts and construction schedules

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EVIDENCE GUIDE

- tools and equipment appropriate to applying safe work practices, including computers, software and calculators
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability

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EVIDENCE GUIDE

and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Applications for pipe and service locating equipment include:

- burst water pipes
- excavations where existing services may be located
- locating existing services for new connections.

Locating equipment includes:

- electronic detection equipment
- metal detectors
- sound detection equipment.

Operating procedures include:

- defining the application, equipment operation and equipment limitations.

Safety procedures include:

- access restrictions
- electrical safety
- equipment safety requirements
- excavation safety
- personal protective equipment.

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RANGE STATEMENT

Pipe-freezing equipment include:	• applications where interruption to water supply is not an option • burst water mains • maintenance • repairs.
Sewer and drain camera uses include:	• inspection of pipework • location of damaged pipework • root intrusion identification.
Under-road boring equipment uses include:	• installation of new services where damage to roads and structures is undesirable or cost prohibitive • replacement of services.
Robotic sewer repair and chemical grout systems include re-lining of:	• damaged sewers • stormwater drains • water mains.
Trenchless pipe repair systems include:	• polyethylene sleeves • stainless steel sleeves • other pipelining materials.
High-pressure drain cleaning equipment includes blocked:	• manholes • sewers • stormwater drains.

Unit Sector(s)

Unit sector Plumbing and services

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCPPS5015B Inspect plumbing and drainage systems

Modification History

Addition of sustainability content to performance criterion
Minor editorial changes throughout
Equivalent to CPCPPS5015A

Unit Descriptor

This unit of competency specifies the outcomes required to conduct inspections of hydraulic systems for a range of residential, commercial and industrial buildings to ensure compliance with Australian and New Zealand standards and local authority and operational performance requirements.

Application of the Unit

This unit of competency supports development of skills and knowledge required for competent workplace performance in a consultancy or supervisory capacity in relation to plumbing services and hydraulics.

Licensing/Regulatory Information

Inspections of hydraulic systems must comply with Australian and New Zealand standards and local authority and operational performance requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	**Specify local authority inspection requirements.**	1.1	Local authority inspection requirements for ***hydraulic systems*** are specified according to legislation and standards.
		1.2	***Approved materials*** are specified for different applications.
		1.3	Installation requirements are specified in compliance with manufacturer manuals and regulatory requirements.
2	**Develop inspection procedures.**	2.1	***Administrative procedures*** for ***inspection projects*** are developed.
		2.2	***Inspection checklists*** are developed.
3	**Conduct inspections**	3.1	Communication channels are established with relevant site personnel and stakeholders.
		3.2	Inspection routes and schedules are planned and detailed.
		3.3	Work health and safety (WHS) guidelines and ***sustainability principles and concepts*** are applied to inspections, and personal protective equipment is worn.
		3.4	Inspections are conducted to assess compliance with regulatory requirements and professional workmanship standards.
		3.5	On-site ***as-constructed plans*** are hand sketched and measurements are taken.

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		3.6	***Dispute-resolution techniques*** are implemented as necessary when non-compliance is identified.
		3.7	***Testing procedures*** are implemented.
		3.8	Inspection and testing results are accurately recorded.
4	**Prepare reports.**	4.1	***Inspection reports*** are prepared using on-site records, including as-constructed plans.
		4.2	Recommendations are detailed and reported.
		4.3	Rectification schedules are produced.
5	**Enforce compliance.**	5.1	Breaches of relevant regulation or standard are detailed.
		5.2	Infringement notices are issued and relevant follow-up procedures are implemented.
		5.3	In cases of non-compliance, ***enforcement action*** is implemented with infringement notices.
6	**Maintain records.**	6.1	Inspection diary is maintained.
		6.2	Inspection records are processed according to established administrative procedures.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - establish communication channels
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- literacy skills to:
  - develop administrative procedures and checklists
  - issue infringement notices
  - maintain records
  - prepare inspection reports
  - read and interpret:
    - documentation from a variety of sources
    - manufacturer manuals and regulations
    - plans, specifications and drawings
  - record inspection and testing results
- numeracy skills to apply measurements and calculations
- planning and organising skills to plan and set out work
- technical skills to inspect hydraulic systems for a range of residential, commercial and industrial buildings to ensure compliance with Australian and New Zealand standards and local authority and operational performance requirements

Required knowledge

- common terminology and definitions used in the design of plumbing and drainage systems
- nature of materials used and effects of performance under various conditions
- principles of technology used in the design of plumbing and drainage systems
- requirements of state regulatory authorities, Australian standards and manufacturer specifications, including hazards identified in relation to devices and systems used
- workplace safety requirements, including relevant statutory regulations, codes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- specifying local authority inspection requirements for hydraulic systems according to legislation and standards
- developing administrative procedures for inspection projects
- implementing dispute-resolution techniques
- conducting compliance inspections
- taking relevant measurements and sketching on-site as-constructed plans
- implementing testing procedures
- preparing inspection reports
- detailing breaches to regulations or standards
- maintaining an inspection diary.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions, including design brief drawings, specifications,

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codes, design concepts and construction schedules
- tools and equipment appropriate to applying safe work practices, including computers, software and calculators
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

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Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Hydraulic systems include:

- fire services
- gas services
- mechanical services
- sanitary plumbing and drainage
- stormwater drainage
- trade waste
- water supply.

Approved materials are identified from Australian and New Zealand standards and include:

- fittings
- fixtures
- pipes.

Administrative procedures must include:

- file management
- inspection allocation
- inspection records
- logging inspections.

Inspection projects include:

- hydraulic consultant
- local authority
- plumbing supervisor.

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Inspection checklists:	• include:
	  • approved installation methods
	  • authorised materials
	  • project section
	• comply with:
	  • Australian and New Zealand standards
	  • distances
	  • limitations
	  • National Construction Code
	  • other regulatory requirements.

Sustainability principles and concepts:	• cover the social, economic and environmental use of resources to meet current and future needs
	• may include:
	  • selecting appropriate components and material
	  • choosing efficient products
	  • using material efficiently
	• storing and disposing of hazardous material to ensure minimal environmental impact.

As-constructed plans include layout of:	• fire services pipework • gas pipework • mechanical services pipework • sanitary plumbing and drainage pipework • stormwater pipework • trade waste drainage systems • water supply pipework.
Dispute-resolution techniques include:	• active listening techniques • non-threatening body language • power neutral relationships • other recognised dispute avoidance and resolution techniques.
Testing procedures include:	• air pressure tests • compliance checklist • gas leak detection

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- hydrostatic tests
- mirror tests
- quality assurance (QA) audit
- sound testing.

Inspection reports include:

- defect
- inspection
- performance
- quality assurance.

Enforcement action includes:

- fines
- legal action
- notification to plumbing licensing body
- penalties.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPPS5023A Design solar water heating systems

Modification History

Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPPS5003A

Unit Descriptor

This unit of competency specifies the outcomes required to design efficient, cost effective solar water heating systems for residential, commercial and industrial applications using proprietary components and manufacturer design information.

Application of the Unit

This unit of competency supports the needs of experienced tradespeople with a responsibility for designing solar water heating systems for residential, commercial and industrial buildings.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	**Evaluate design parameters.**	1.1	***Scope of work*** for solar water heating system design is established.
		1.2	***Design requirements*** are determined from relevant Australian standards, codes, plans, specifications and client brief.
		1.3	Locations of solar collectors are assessed and effect of each location on ***efficiency*** is evaluated.
		1.4	***Cost-benefit analysis*** is conducted comparing a range of materials and system designs.
		1.5	Environmental and community benefits of solar water heating systems are evaluated.
		1.6	***Statutory and regulatory requirements and relevant Australian standards and codes*** for the design of solar water heating systems are analysed and applied.
		1.7	***Manufacturer requirements*** and trade and technical manuals are interpreted.
		1.8	Additional research, including a ***desktop study***, is conducted to outline design parameters.
		1.9	***Performance requirements*** are established, considering safety of system users or building occupants.
		1.10	Factors that contribute to quality, safety and time efficiency are determined.
2	**Plan and detail system components.**	2.1	***Layout of pipework systems***, and type and location of ***fittings and valves***, are planned.
		2.2	Range configuration and application of ***proprietary solar heated water systems***, and materials and valves to be selected, are evaluated.
		2.3	***Solar water heating system calculations*** are performed.
		2.4	Typical configuration of a hydraulic circuit (flow and return) and its ***components*** for a pumped-storage solar water heating system is designed.

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		2.5	Water quality and water pre-treatment methods are specified.
		2.6	Suitable types and levels of insulation for system components are specified and a range of ***methods to prevent freezing and protect from over performance*** is detailed.
		2.7	***Pipe size, velocity, flow and pressure calculations*** are performed for a range of applications.
		2.8	***Pipe supports*** are designed for a range of applications.
		2.9	Approved ***materials***, ***jointing methods*** and ***installation requirements*** for solar water heating systems are specified.
		2.10	Allowance for expansion and contraction is provided.
3	**Design and size systems.**	3.1	***Solar collectors*** are selected to meet the installation requirements.
		3.2	Residential, commercial and industrial solar water heating systems are designed.
		3.3	Solar pre-heat systems are designed.
		3.4	Solar pool and spa heating systems are designed.
		3.5	Solar water heating systems are designed and sized using calculations and computer software packages.
		3.6	***Sustainability principles and concepts*** are applied throughout the design process.
4	**Prepare documentation.**	4.1	Client brief of the desired design is prepared.
		4.2	***Plans*** and ***specifications*** are prepared for a range of solar water heating systems.
		4.3	***Testing*** and ***commissioning schedule*** is prepared.
		4.4	***Operation and maintenance manual*** is produced, including information on how to properly and safely maintain the system.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - communicate with others to ensure safe and effective work practices
  - confirm job specifications and client requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to develop creative and responsive approaches
- literacy skills to:
  - prepare documentation, including:
    - operation and maintenance manual
    - plans, specifications and schedules
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications, drawings and design briefs
    - standards and manufacturer requirements and manuals
    - statutory and regulatory requirements
- numeracy skills to interpret data and to apply measurements and calculations
- planning and organising skills to:
  - research, collect, organise and understand information relating to the design of solar water heating systems
  - take initiative and make decisions
- problem-solving skills to analyse requirements, consider options and design an appropriate system
- technical skills to design solar water heating systems
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- application of:
  - relevant Australian standards, including AS/NZS3500 National plumbing and

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drainage
    - manufacturer specifications, including hazards identified in relation to devices and systems used
    - other codes or standard operating procedures
    - state or territory regulatory authorities' requirements
- common terminology and definitions used in design of solar water heating systems
- principles of technology used in design of solar water heating systems
- work health and safety (WHS) requirements, including relevant statutory regulations, codes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to, as a minimum, provide evidence of the ability to:

- design, size and document the layout details using two methods of providing solar-heated water systems;
  - one to be a gas-boosted commercial solar system; one to be a heat pump-boosted system
- develop a specification for each of the following projects:
  - a high-rise mixed development building to a minimum of 29 floors, inclusive of a basement, to include fixtures on each floor level (fixtures are included in the basement)
  - a wide span project, such as a school
- specifications for each of the projects, to include:
  - evaluating and documenting design parameters, including client, regulatory, manufacturer and relevant Australian standard and code requirements for a range of solar water heating systems
  - evaluating health risks associated with heated water supplies
  - conducting a cost-benefit analysis
  - planning and detailing system components, including:
    - circulating systems
    - solar collectors
    - valve and piping systems
  - designing a range of residential, commercial and

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industrial solar water heating systems
- designing solar pre-heat systems
- designing solar pool and spa heating systems
- preparing plans and specifications for a range of solar water heating systems
- preparing testing and commissioning schedules
- producing operation and maintenance manuals
- applying sustainability principles and concepts throughout the design
- communicating with others to ensure safe and effective work site operations.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions, including design brief drawings, specifications, codes, design concepts and construction schedules
- tools and equipment appropriate to applying safe work practices, including computers, software and calculators
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

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- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in

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the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Scope of work must include:

- interpreting plans and specifications, and sizing and documenting layout of solar water heating systems for applications including residential, commercial and industrial buildings for new projects or an existing structure being renovated, extended, restored or maintained
- heat transfer mechanism analysis, including conduction, convection and radiation (long wave and short wave), and the evaluation of transmittance, absorption and emittance properties of materials used in solar collectors
- solar radiation calculations, including:
  - calculations of efficiency
  - calculations of radiation falling on collectors
  - daily, monthly and yearly calculations.

Design requirements may include:

- architectural plans
- building specifications
- fire rating of penetrations
- frost protection
- integration with other heat sources
- limitations of various systems
- overheating protection
- owner requirements
- pipework identification
- specialist heated water use applications.

Efficiency must include:

- angle of collector in relation to latitude
- comparison of demand and efficiency curves for various types of solar collectors
- current and potential shading
- direction in relation to north
- efficiency in relation to:
  - ambient temperature
  - flow
  - location
  - pollution
  - prevailing wind conditions

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- magnetic north as opposed to true north.

Cost-benefit analysis:

- compares the range of suitable materials and system choices available to enable cost-effective choices to be made without compromising the integrity of the project
- may include:
  - design styles
  - energy costs
  - expected design life
  - labour costs
  - material costs
  - safety factors
  - speed of installation
  - suitable materials
- comparison and evaluation of capital cost, simple pay back and lifecycle cost of solar and other heat sources
- comparison of initial set-up costs to the energy savings available and establishment of cost-recovery period.

Statutory and regulatory requirements and relevant Australian standards and codes may include:

- Acts, regulations, and commonwealth, state or territory, and local government requirements
- Australian standards:
  - AS/NZS3500 National plumbing and drainage
  - AS2200 Design charts for water supply and sewerage
  - AS2369.1 Materials for solar collectors for swimming pool heating – rubber materials
  - AS2369.2 Materials for solar collectors for swimming pool heating – flexible or plasticised polyvinyl chloride
  - AS/NZS2535.1 Test methods for solar collectors – thermal performance of glazed liquid heating collectors including pressure drop
  - AS/NZS2712 Solar and heat pump water heaters design and construction
  - AS3634 Solar heating systems for swimming pools
  - AS/NZS4234 Solar water heaters domestic and heat pump – calculation of energy consumption

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- AS/NZS4445.1 Solar heating domestic water heating systems performance rating procedure using indoor test methods
- DR04527 Amendment 1 to AS/NZS2712 Solar water heaters design and construction
- National Construction Code.

Manufacturer requirements may include:

- heater maintenance and servicing
- material specifications
- provision for heater pressure and temperature discharge
- protection for freezing and overheating
- recommended specific fixings for pipework
- sizing tables
- technical and trade manuals
- limitations of use.

Desktop study may include:

- collection and interpretation of data for design purposes, such as:
  - architectural and building plans
  - developer plans
  - manufacturer's data
  - documents, which may include:
    - applications
    - brochures
    - forms
    - policies
    - other reports as available
- local authorities' requirements
- area suitability for solar
- shadow studies
- comparison of performance of various types of solar water heaters in terms of design, location and predicted solar fraction.

Performance requirements are established using relevant Australian standards, codes, commonwealth, state or territory and local authority plans and may include:

- flow rate requirements
- pressure
- system design
- velocity
- water quality and its effect on the system.

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Layout of pipework systems:

- must include:
  - dual feed
  - ring main
  - single pipe
- should not unduly affect building integrity and aesthetic appeal
- should have principles of economy, serviceability, durability and fit for use applied.

Fittings and valves may include:

- fittings:
  - bends
  - elbows
  - tees
  - unions
- valves:
  - backflow prevention
  - excess pressure
  - frost protection devices
  - isolating
  - location of valves
  - over temperature
  - pressure limiting
  - pressure reduction
  - strainers.

Proprietary solar heated water systems may include:

- alternative supplementary fuel sources, including:
  - coal
  - electricity
  - fuel oil
  - gas
  - heat pump
  - waste heat recovery (mechanical plant)
  - wood
- circulating systems
- clarifiers
- close coupled, split systems
- direct and indirect heating systems
- heat exchange systems

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- heated water heaters
- pool heaters
- solar pre-heaters
- spa heaters
- storage systems
- sun track systems.

Solar water heating system calculations may include:

- area locality
- circulation calculations
- energy balance equation
- flow calculations
- heat loss calculations, covering:
  - collector losses
  - overnight losses
  - standing losses
- incoming water temperature
- temperature and energy equations
- varying inlet temperature and flow rate effect on the performance of a solar collector
- volume calculations.

Components may include:

- collectors
- differential controllers
- electronics
- expansion tanks
- filters
- fittings
- flow and return pipework
- heat exchangers
- insulation
- overflows
- pumps
- safe trays
- storage vessels
- suitable type and size of circulating pumps
- supplementary heat sources
- support frames
- timers and mechanical components
- valves
- water treatment.

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Methods to prevent freezing and protect from over performance may include:

- circulating systems
- drain back systems
- dump valves
- heat trace systems
- indirect systems
- insulation.

Pipe size, velocity, flow and pressure calculations must include:

- rate of discharge
- temperature
- velocities
- volume.

Pipe supports may include:

- anchors
- bracket spacing
- corrosion protection
- hanging brackets
- manufacturer-recommended specific fixings
- material requirements
- provision for expansion
- saddles.

Materials may include:

- copper (Cu)
- other approved materials.

Jointing methods may include:

- brazing
- compression
- flaring
- mechanical joints
- other approved jointing methods.

Installation requirements include:

- pipe protection, which may include:
  - corrosion
  - impact
- fire rating
- level of workmanship
- manufacturer-recommended specific fixings
- pipe support

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- provision for expansion
- serviceability and access
- system structure support.

Solar collector design may include:

- collector housing
- fin and tube collectors
- glass
- insulation
- pipe collectors
- pre-heat systems
- sun tracking systems
- vacuum tube.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient use of material
  - efficient energy use/capital outlay comparison
  - selecting energy efficient water heater
  - reusing water, such as rainwater, greywater and recycled non-drinking water
  - consideration of the Green Building Council of Australia rating scheme
  - selecting appropriate components to ensure minimal environmental impact.

Plans:

- may include:
  - axonometrics
  - cross-sections
  - details
  - elevations
  - isometrics
  - schematics
  - sections
- may be produced using:
  - computer generation
  - drawing equipment.

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Specification may include:

- support
- jointing
- flow requirements
- manufacturer requirements
- materials
- safety (WHS)
- specialised components
- testing
- valve selection
- workmanship.

Testing may include:

- air pressure
- defect inspection
- hydrostatic
- mains pressure
- performance
- quality assurance (QA) audit.

Commissioning schedule may include:

- balancing the system
- checking and flushing the system
- checking and maintaining heat transfer fluid levels
- temperature setting
- disinfection
- flow test
- leak check
- pressure test
- system certification
- system defects
- system functions as per design
- valve operation.

Operation and maintenance manual may include:

- as installed drawings
- certification documentation
- results of commissioning test
- heater detail, setting and operations
- maintenance schedules
- manufacturer brochures and technical information
- valve function
- safety management system
- system detail, setting and operations.

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Unit Sector(s)

Functional area

Unit sector	Plumbing and services

Custom Content Section

Not applicable.

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CPCPPS5024A Conduct a water audit and identify water-saving initiatives

Modification History

Changes to unit descriptor, application, performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPPS5004A

Unit Descriptor

This unit of competency specifies the outcomes required to identify wasted water and leaks in pipework and fixtures and, where water use reduction is possible, types of water-saving devices that are appropriate. The unit also requires the preparation of a report that reflects this assessment.

Application of the Unit

This unit of competency supports the development of skills and knowledge required to conduct water and energy audits and recommend water-saving initiatives in relation to plumbing services and construction hydraulics.
Application of the unit is relevant to multi-storey residential, commercial and industrial buildings with or without connection to reticulated water supply.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	**Calculate water use.**	1.1	***Scope of work*** for conducting water audits is established.
		1.2	***Client requirements*** are identified from relevant Australian standards, codes, plans, specifications and client brief.
		1.3	***Types of flow and pressure-measuring devices***, and their use and location are specified.
		1.4	***Flow and pressure tests*** are conducted and flows at outlets are measured.
		1.5	Actual water use is compared to ideal use, and the difference is calculated.
		1.6	***Statutory and regulatory requirements*** for the use of water are interpreted and applied.
		1.7	***Manufacturer requirements*** and trade and technical manuals are interpreted.
		1.8	***Desktop study*** is conducted and ***performance requirements*** are established.
2	**Identify excessive water and energy use.**	2.1	***Leak identification processes*** are implemented, considering safety of system users or building occupants.
		2.2	Flows are measured and evaluated against relevant standards and user requirements.
		2.3	Suitability of existing fixtures and fittings is evaluated

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			against new technology.
		2.4	Water use times are identified and compared to optimal timing.
		2.5	Existing inefficient system conditions, such as dead legs, are identified and analysed.
		2.6	Pressure test is conducted and consequences of high and low pressures are identified and compared to industry standards.
		2.7	Energy saving associated with reduction in water use is evaluated.
3	**Evaluate methods to conserve water and energy.**	3.1	Flow restrictors, ***sensors*** and pressure-limiting devices are identified for a range of applications.
		3.2	***Automatic systems*** are identified for a range of applications.
		3.3	***Alternative processes and practices*** are evaluated for optimum water and energy savings.
		3.4	***Alternative fixtures and fittings*** are evaluated for optimum water and energy savings.
		3.5	***Rainwater harvesting*** techniques and processes are applied.
		3.6	***Recycling and re-use processes*** are designed.
		3.7	***Sustainability principles and concepts*** are applied throughout water audit process.
4	**Report findings.**	4.1	***Cost-benefit analysis*** is conducted, including the investment return period.
		4.2	***Water and energy audit report*** is prepared.
		4.3	Resultant environmental benefits and water and energy savings are identified and reported.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - communicate with others to ensure safe and effective work practices
  - confirm job specifications and client requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- literacy skills to:
  - prepare a water and energy audit report
  - read and interpret:
    - plans, specifications, drawings and design briefs
    - standards and manufacturer requirements and manuals
    - statutory and regulatory requirements
- initiative and enterprise skills to:
  - comply with WHS and organisational quality procedures and processes
  - develop creative and responsive approaches to conserving water and energy
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - research, collect, organise and understand information relating to water use
  - take initiative and make decisions
- problem-solving skills to:
  - analyse requirements
  - carry out tests
  - consider options
  - recommend appropriate water and energy saving measures
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
  - accurately apply design principles relating to hydraulic systems, design concepts, measurements and calculations
  - apply and interpret documentation from a wide range of sources, including legislation, standards, drawings and specifications
- technology skills to:

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- access and understand site-specific instructions in a variety of media
- use mobile communication technology

Required knowledge

- hazards associated with devices and systems used in the hydraulic sector
- installation methods used in hydraulic systems
- nature of materials and effect of their performance in a variety of conditions
- preparation and interpretation of plans and specifications
- requirements of commonwealth, state or territory regulatory authorities, relevant Australian standards and codes, manufacturer specifications, National Construction Code (NCC) and other relevant codes, standards and operating procedures
- terminology and definitions used in hydraulic design
- variety of applications of technology principles in design of water and energy-efficient usage systems for all classes of building
- work health and safety (WHS) requirements, including relevant statutory regulations, codes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

It could be assessed on its own or as part of an integrated assessment activity involving audit of water and energy use in at least two different types of building and the preparation of comprehensive reports.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to, as a minimum, provide evidence of the ability to:

- conduct a water audit and identify water saving initiatives for a:
  - 50 unit residential building
  - 20 floor commercial office building
  - a commercial laundry
- including:
  - applying sustainability principles and concepts throughout the audit and identifying water-saving initiatives
  - conducting pressure and flow measurements
  - interpreting and applying statutory and local government requirements for the use of water
  - reporting water wasting practices and processes, including leaks
  - specifying sensors and automatic systems for a range of applications
  - recommending recycling and re-use processes
  - preparing a water and energy audit report
  - conducting a cost-benefit analysis, including investment return period
  - identifying and reporting on environmental

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benefits and water savings
- applying sustainability principles and concepts throughout the water audit and identify water-saving initiatives
- communicating with others to ensure safe and effective work site operations.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions, including design brief drawings, specifications, codes, design concepts and construction schedules
- tools and equipment appropriate to applying safe work practices, including computers, software and calculators
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and

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correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Scope of work must include:

- compiling reports
- identifying:
  - procedures, practices and products to reduce

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	water and energy consumption • wasted water • water-saving initiatives • producing a cost-benefit analysis.
Client requirements must include:	• compliance with regulatory requirements • more efficient use of water resources • reduction in water and energy costs • maintaining satisfactory system performance.

Types of flow and pressure-measuring devices include:	• applications, which may include:
	  • domestic cold and heated water supply
	  • cooling towers
	  • industrial processes
	  • irrigation
	  • mechanical
	  • sanitation
	  • trade waste
	• measuring methods, which may include:
	  • direct
	  • electronic
	  • hand-held
	  • indirect
	  • in-line
	  • mechanical.

Flow and pressure tests may include:	• interpretation of flow and pressure tests conducted by a contractor • on-site measurement of flow (l/s), velocity (m/s) and pressure (kPa).
Statutory and regulatory requirements may include:	• Acts, regulations and commonwealth, state or territory, and local government regulations • National Construction Code • other relevant Australian standards and codes.
Manufacturer requirements must include:	• flow and pressure requirements.

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Desktop study includes:

- comparison of range of suitable materials and system choices available to enable cost-effective choices to be made without compromising integrity of project
- research and evaluation of water-saving products, processes and procedures currently available.

Performance requirements must include:

- maintenance of flow, velocity, pressure and discharge requirements of the client, using relevant Australian standards, National Construction Code, or other relevant codes and standards.

Leak identification processes may include:

- electronic leak detection
- listening devices
- measuring equipment
- cameras.

Sensors may include:

- pressure switches
- flow switches
- high and low level
- moisture.

Automatic systems may include:

- electronic and mechanical timer
- pressure-activated
- user-activated.

Alternative processes and practices may include:

- change in personal water habits
- change in timing
- discontinuation of a process
- irrigation before sunrise and after sunset
- lower water pressures
- modifying a process
- modifying wash-down cleaning procedures and order of operation
- rainwater harvesting and usage
- running dishwashers and washing machines with full loads
- testing pipe systems with air instead of water
- using water-efficient appliances and fixtures
- waste water collection and reuse.

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Alternative fixtures and fittings may include:	• drip systems
	• irrigation systems
	• low-energy and water-use appliances, such as:
	  • air cooling towers
	  • dishwashers
	  • dual flush low volume toilet flushing systems
	  • tapware
	  • waterless and sensor control urinals
	  • washing machines
	• low-flow shower roses
	• outlet-flow control devices
	• pressure control devices.

Rainwater harvesting must include:	• collection, storage and distribution of rainwater, including the use of tanks and dams.
Recycling and re-use processes may include:	• black water treatment and reuse options • industrial processes • grey water treatment and reuse options • recovery of test water, such as fire.

Sustainability principles and concepts:	• cover the current and future social, economic and environmental use of resources
	• may include:
	  • efficient energy usage/capital outlay comparison
	  • selecting water efficient appliances and fixtures
	  • using alternative water supplies
	  • consideration of the Green Building Council of Australia rating scheme.

Cost-benefit analysis compares:	• installation, set-up and running costs against the capital investment to determine the cost recovery period • the range of suitable materials and system choices available to enable cost-effective choices to be made without compromising integrity of project.

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Water and energy audit report is a comprehensive report written to industry standards that includes:

- client brief
- analysis
- results
- methodology
- conclusions
- recommendations.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPPS5025A Design grey water re-use systems

Modification History

Changes to unit title, descriptor, application, performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPPS5005A

Unit Descriptor

This unit of competency specifies the outcomes required to design grey water re-use systems. The unit requires the ability to consider legislation, risk implications, and collection, treatment, diversion and storage options when designing these systems.

Application of the Unit

This unit of competency supports the needs of experienced tradespeople with a responsibility for designing grey water re-use systems.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	**Evaluate design parameters.**	1.1	***Scope of work*** is established for design of grey water reuse systems for wide span and high-rise building projects.
		1.2	***Design requirements*** are determined from relevant Australian standards, codes, plans, specifications and client brief.
		1.3	Potential household or community ***health and environmental risks*** are identified and ***measures to protect public health*** are identified and implemented.
		1.4	***Cost-benefit analysis*** is conducted.
		1.5	***National water programs, statutory and regulatory requirements, and relevant Australian standards and codes*** for the design of grey water re-use systems are interpreted, analysed and applied.
		1.6	***Manufacturer requirements*** and trade and technical manuals are interpreted.
		1.7	Additional research, including a ***desktop study***, is conducted to outline design parameters.
		1.8	***Performance requirements*** are established, considering safety of system users or building occupants.
2	**Plan and detail system components.**	2.1	Primary, secondary and advanced secondary treatment and tertiary systems are detailed.
		2.2	***Layout of pipework systems*** and type and location of ***fittings, valves, controls*** and other system components are planned.
		2.3	Changes to building drainage system are designed and detailed, and inspection requirements are identified.
		2.4	Diversion, storage, disposal, wet weather storage, and ***land application options*** are evaluated and detailed, problems are identified and solutions applied.
		2.5	Stored and pressurised grey water systems for irrigation, sanitary flushing and other approved use are detailed.

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		2.6	***Storage tanks*** and approved disposal options are designed and detailed.
		2.7	***Pipe size and pump duty calculations*** are made and ***pumpwell, pump and pump control requirements*** are sized and detailed.
		2.8	Approved ***materials*** and ***jointing methods*** for grey water re-use systems are evaluated, ***pipe supports*** are designed and ***installation requirements*** are specified.
3	**Design and size systems.**	3.1	Grey water reuse systems are designed for a range of residential, commercial and industrial applications to include water treatment and backflow protection of drinking and non-drinking water supply systems.
		3.2	Grey water reuse systems are designed to ensure that the system can be properly and safely maintained.
		3.3	Grey water reuse systems are designed and sized using calculations and computer software packages.
		3.4	***Sustainability principles and concepts*** are applied throughout the design process.
4	**Prepare documentation.**	4.1	Client brief of the desired design is prepared.
		4.2	***Plans*** and ***specifications*** are prepared for a range of grey water re-use systems.
		4.3	***Testing*** and ***commissioning schedule*** is prepared.
		4.4	***Operation and maintenance manual*** is produced, including information on how to properly and safely maintain the system.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - communicate with others to ensure safe and effective work practices
  - confirm job specifications and client requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to develop creative and responsive approaches
- literacy skills to:
  - prepare documentation, including:
    - operation and maintenance manual
    - plans, specifications and schedules
  - read and interpret:
    - plans, specifications, drawings and design briefs
    - standards and manufacturer requirements and manuals
    - statutory and regulatory requirements
- numeracy skills to:
  - apply measurements and calculations
  - interpret data
- planning and organising skills to:
  - research, collect, organise and understand information relating to the design of grey water re-use systems
  - take initiative and make decisions
  - problem-solving skills to analyse requirements, consider options and design an appropriate system
- technical skills to apply design concepts and principles relating to hydraulic systems
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- approved installation methods are identified

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- hazards associated with devices and systems used in the hydraulic sector
- nature of materials and effect of their performance in a variety of conditions
- organisational quality procedures and processes
- principles of technology in the design of grey water re-use systems for residential, commercial and industrial applications to include water treatment and backflow protection of drinking and non-drinking water supply systems
- required Australian standards, codes, manufacturer specifications, National Construction Code (NCC) and operating procedures relevant to the sector
- terminology and definitions used in hydraulic design
- work drawings and specifications
- work health and safety (WHS) requirements, including relevant statutory regulations, codes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to, as a minimum, provide evidence of the ability to:

- design, size and document the layout details, including a specification for a high-rise mixed development building and a wide span project, such as a school or industrial complex, including:
  - evaluating and documenting design parameters, including client, regulatory, manufacturer and relevant Australian standard code requirements for a range of grey water re-use systems
  - planning and detailing system components, including:
    - storage tanks
    - system overflow
    - treatment systems
    - piping systems
    - plumbing systems
    - usage systems
  - designing and sizing a grey water reuse system
  - preparing plans and specifications for a range of grey water reuse systems to industry standards
  - preparing testing and commissioning schedules
  - preparing operation and maintenance manuals
  - applying sustainability principles and concepts throughout the system design
  - communicating with others to ensure safe and effective work site operations.

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Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions, including design brief drawings, specifications, codes, design concepts and construction schedules
- tools and equipment appropriate to applying safe work practices, including computers, software and calculators
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

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Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Scope of work:

- must include:
  - interpretation of plans and specifications
  - sizing and documenting layout of grey water re-use systems for residential, commercial and industrial applications to include water treatment and backflow protection of drinking and non-drinking water supply systems
- may be for new projects or an existing structure being renovated, extended, restored or maintained.

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Design requirements must include:

- architectural plans
- building specifications
- owner requirements
- pipework identification
- sizing of pipework
- backflow protection of drinking and non-drinking water supply systems
- water treatment
- specialist water use applications.

Health and environmental risks include:

- health risks, which may include:
  - abdominal pain
  - acute enteritis
  - bacillary dysentery
  - chest pain
  - cholera
  - common colds
  - coughing
  - diarrhoea
  - digestive and nutritional disturbances
  - dysentery
  - fever
  - gastroenteritis
  - giardiasis
  - helminthes, including flukes and worms
  - hepatitis
  - hookworm disease
  - infectious hepatitis
  - meningitis
  - muscle aches
  - neurological symptoms, including nervousness and insomnia
  - poliomyelitis
  - respiratory infections, such as pneumonia
  - restlessness
  - salmonellosis (food poisoning)
  - taeniasis
  - toxoplasmosis

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- typhoid fever
- vomiting
- weight loss
- environmental risks, which may include:
  - algal blooms
  - excess nutrient loads
  - fish kills
  - oxygen depletion.

Measures to protect public health must include:

- auditing
- contact avoidance
- contact minimisation
- disinfection and sterilisation
- education
- legislation
- licensing
- maintenance
- separation barriers
- set back distances
- timing discharges
- wet weather storage.

Cost-benefit analysis compares:

- the range of suitable materials and system choices available to enable cost-effective choices to be made without compromising integrity of project, such as suitable treatment, disposal options and disinfection options
- water savings and environmental benefits compared to initial and ongoing maintenance costs.

National water programs, statutory and regulatory requirements, relevant Australian standards, and codes may include:

- Acts and regulations
- Australian standard requirements, including:
  - AS/NZS1546 On-site domestic wastewater treatment units
  - AS/NZS1547 On-site domestic wastewater management
  - AS/NZS3500 National plumbing and drainage
  - AS2200 Design charts for water supply and sewerage
- National Construction Code

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- commonwealth, state or territory government policies, including health departments.

Manufacturer requirements must include:

- material specifications
- grey water treatment systems
- pump installation
- pipe sizing
- storage systems
- technical and trade manuals.

Desktop study may include collection and interpretation of data for design purposes in:

- architectural and building plans
- developer plans
- manufacturer data
- other documents, including:
  - applications
  - brochures
  - forms
  - policies
  - other reports as available.

Performance requirements may include:

- compliance limits for:
  - bacteria levels
  - chlorine levels
  - nutrients
  - pH
  - phosphates
- requirements established using relevant Australian standards, codes and local authority plans, including:
  - cover
  - discharge
  - flow conditions
  - pipe grades.

Layout of pipework systems:

- may include:
  - drainage systems
  - elevated pipework systems
  - gravity systems
  - pumped and rising mains

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- stack systems, may include:
  - fully vented
  - fully vented modified
  - single stack
  - single stack modified
  - waste stack
  - two-pipe system
  - reduced velocity aerator system
- should not unduly affect building integrity and aesthetic appeal
- includes location of pipework (fire rating of enclosure)
- should demonstrate principles of economy, serviceability, durability and fit for use.

Fittings, valves and controls must include:

- backflow prevention devices
- irrigation control systems
- isolating valves
- level indicators
- pump controls.

Land application options may include:

- surface irrigation
- subsurface irrigation
- spray irrigation.

Storage tanks may include:

- connections
- containment
- location
- material
- overflow provision
- pumps
- sizing
- support
- switches
- valves
- vermin control.

Pipe size and pump duty calculations may include:

- calculating pipe sizing
- calculating pressure and flow requirements

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- determining flow and fixture loadings
- interpreting design charts and tables.

Pumpwell, pump and pump control requirements may include:

- automatic controls
- capacity
- corrosion-resistant materials
- detailing
- high and low-level water controls and alarms
- inlet and outlet design requirements
- installation and mounting requirements
- macerator requirements
- pump sizing
- pumpwell sizing
- selection of pump type
- valve requirements
- warning system.

Materials may include:

- copper (Cu)
- polypropylene (PP)
- polybutylene (PB)
- polyethylene (PE)
- unplasticised polyvinyl chloride (PVC-U)
- other approved material.

Jointing methods may include:

- brazing
- compression joints
- electrofusion welding
- mechanical joints
- solvent cement
- threading
- other approved jointing methods.

Pipe supports include:

- anchors
- bedding
- bracket spacing
- concrete support
- corrosion protection
- manufacturer-recommended specific fixings
- material requirements

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- provision for expansion
- saddles.

Installation requirements may include:

- pipe protection, which may include:
  - cover
  - corrosion
  - impact
- fire rating
- level of workmanship
- manufacturer-recommended specific fixings
- pipe support
- provision for expansion
- serviceability and access.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
- selecting appropriate material to ensure minimal environmental impact
- efficient use of material
- efficient energy usage/capital outlay comparison
- local environment consideration
- water efficiency
- reuse of greywater
- consideration of the Green Building Council of Australia rating scheme.

Plans:

- may include:
  - axonometrics
  - elevations
  - details
  - cross-sections
  - isometrics
  - sections
- schematics, which may be produced using:
  - computer generation
  - drawing equipment.

Specification may include:

- backflow prevention

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- flow requirements
- jointing
- manufacturer requirements
- materials
- residual pressures
- safety (WHS)
- specialised components
- storage
- support
- testing
- valve selection
- water treatment
- workmanship.

Testing may include:

- air pressure
- backflow protection
- defect inspection
- drainage inspection
- hydrostatic
- performance:
  - flow
  - pressure
- water quality
- quality assurance (QA) audit.

Commissioning schedule may include:

- balancing disposal system
- flow and pressure adjustments
- leak check
- pump settings
- pressure test
- safety requirements
- system certification
- system flushing
- system defects
- system functions as per design
- system purge
- valve operation
- ventilation
- vermin control.

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Operation and maintenance manual may include:

- as installed drawings
- certification documentation
- land application compliance checks
- maintenance schedules
- manufacturer brochures
- ongoing maintenance requirements
- pump maintenance
- regular inspections
- results of commissioning test
- safety management system
- surface ponding checks
- system detail, setting and operations
- valve function
- system operational parameter adjustments and checks, including:
  - chlorine levels
  - dissolved oxygen
  - nitrates
  - pH
  - phosphates
  - suspended solids
  - water quality.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPPS5026A Design rainwater collection, storage, distribution and re-use systems

Modification History

Changes to unit descriptor, performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPPS5006A

Unit Descriptor

This unit of competency specifies the outcomes required to design systems for the collection, storage, distribution and re-use of rainwater for drinking and non-drinking uses, including irrigation, toilet flushing and other uses approved by relevant authorities.

Application of the Unit

This unit of competency supports development of skills and knowledge required for competent workplace performance in a consultancy or supervisory capacity in relation to the design of systems for the collection, storage, distribution and re-use of rainwater.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	**Evaluate design parameters.**	1.1	***Scope of work*** is established for rainwater harvesting systems for wide span and high-rise building projects.
		1.2	***Design requirements*** are determined from relevant Australian standards, codes, plans, specifications and client brief.
		1.3	Potential ***contamination*** sources are analysed and solutions are applied.
		1.4	Rainfall patterns and required rainwater storage volumes are established.
		1.5	***Cost-benefit analysis*** is conducted comparing a range of pipe materials and system designs.
		1.6	***Statutory, regulatory requirements and relevant Australian standards and codes*** for the design of rainwater harvesting systems are interpreted, analysed and applied.
		1.7	***Manufacturer requirements*** and trade and technical manuals are interpreted.
		1.8	Additional research, including a ***desktop study***, is conducted to outline design parameters.
		1.9	***Performance requirements*** are established, considering safety of system users or building occupants.
2	**Plan and detail system**	2.1	***Tank type and location*** are specified.
		2.2	***Layout of pipework systems*** and type and location of

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	components.		***fittings, valves and controls*** are planned.
		2.3	***First-flush systems*** are designed and detailed.
		2.4	***Filtration systems*** and ***water contamination solutions*** are specified.
		2.5	***Pipe size calculations*** are completed for a range of applications.
		2.6	Separation of services and backflow prevention devices are designed and detailed.
		2.7	Approved non-contaminating ***materials*** and ***jointing methods*** for rainwater harvesting are specified and ***pipe supports*** are designed.
		2.8	***Pump and ancillary requirements*** are sized and detailed.
		2.9	***Installation requirements*** are specified.
		2.10	Water treatment is specified according to state and territory health requirements.
		2.11	Vermin protection is specified according to manufacturer and state and territory requirements.
		2.12	Allowance for expansion and contraction is provided.
3	**Design and size systems.**	3.1	Rainwater harvesting systems are designed and detailed for a range of residential, commercial and industrial applications.
		3.2	***Rainwater reuse systems*** are designed and detailed.
		3.3	Rainwater harvesting systems are designed and sized using calculation and computer software packages.
		3.4	***Sustainability principles and concepts*** are applied throughout the design process.
4	**Prepare documentation.**	4.1	Client brief of the desired design is prepared.
		4.2	***Plans*** and ***specifications*** are prepared for a range of rainwater harvesting systems.

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4.3 ***Testing*** and ***commissioning schedule*** is prepared.

4.4 ***Operation and maintenance manual*** is produced, including information on how to properly and safely maintain the system.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - communicate with others to ensure safe and effective work practices
  - confirm job specifications and client requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- literacy skills to:
  - prepare documentation, including:
    - operation and maintenance manual
    - plans, specifications and schedules
  - read and interpret:
    - plans, specifications, drawings and design briefs
    - standards and manufacturer requirements and manuals
    - statutory and regulatory requirements
- initiative and enterprise skills to develop creative and responsive approaches
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - research, collect, organise and understand information relating to the design of rainwater collection, storage, distribution and re-use systems
  - take initiative and make decisions
- problem-solving skills to analyse requirements, consider options and design an appropriate system
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to design systems for the collection, storage, distribution and reuse of rainwater for drinking and non-drinking uses
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- common terminology and definitions used in the design of rainwater collection, storage,

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distribution and re-use

- key features of work plans and specifications
- nature of materials used and effects of performance under various conditions
- organisational quality procedures and processes
- principles of technology in the design of rainwater collection, storage, distribution and reuse for residential, commercial and industrial applications to include water treatment and backflow protection of drinking and non-drinking water supply systems
- relevant Australian standards, codes, manufacturer specifications, National Construction Code and operating procedures relevant to the sector
- terminology and definitions used in hydraulic design
- work health and safety (WHS) requirements, including relevant statutory regulations, codes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to, as a minimum, provide evidence of the ability to:

- design, size and document the layout details, including a specification for a high-rise mixed development building and a wide span project, such as a school or industrial complex.
- evaluate and document design parameters, including rainfall, client, regulatory, manufacturer and relevant Australian standard requirements and storage capacity for a range of rainwater harvesting systems
- plan and detail system components, including:
  - authority connection
  - backflow prevention requirements
  - filters
  - fixtures and fitments
  - piping systems
  - pumps
  - storage
  - water treatment
- design and size rainwater harvesting and reuse systems
- prepare plans and specifications for a range of rainwater harvesting and reuse systems to industry standards
- prepare testing and commissioning schedules
- prepare operation and maintenance manuals
- apply sustainability principles and concepts throughout the design to achieve a green star rating
- communicate with others to ensure safe and

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effective workplace operations.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions, including design brief drawings, specifications, codes, design concepts and construction schedules
- tools and equipment appropriate to applying safe work practices, including computers, software and calculators
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be

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transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Scope of work:

- must include:
  - interpreting plans and specifications
  - rainfall analysis
  - sizing and documenting layout of rainwater harvesting systems for residential, commercial and industrial applications to include water treatment and backflow protection of drinking

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	and non-drinking water supply systems • may be for new projects or an existing structure being renovated, extended, restored or maintained.
Design requirements must include:	• architectural plans • building specifications • owner requirements • pipework identification • sizing of pipework • backflow protection of drinking and non-drinking water supply systems • water treatment • specialist water use applications.
Contamination may include:	• bacterial • heavy metal • inorganic • odour • organic • taste • silt • viral • vermin.

Cost-benefit analysis:	• compares the range of suitable materials and system choices available to enable cost-effective choices to be made without compromising integrity of project
	• may include:
	  • design styles
	  • energy costs
	  • expected design life
	  • labour costs
	  • material costs
	  • safety factors
	  • speed of installation
	  • suitable materials.

Statutory, regulatory requirements and relevant Australian standards	• Acts and regulations, commonwealth, state or territory and local government requirements • AS/NZS3500 National plumbing and drainage

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and codes include:

- AS2200 Design charts for water supply and sewerage
- National Construction Code.

Manufacturer requirements may include:

- material specifications
- pipe sizing
- pump installation
- storage system
- technical and trade manuals
- other relevant documents.

Desktop study may include collection and interpretation of data for design purposes in:

- architectural and building plans
- developer plans
- manufacturer data
- other documents, which may include:
  - applications
  - brochures
  - forms
  - policies
  - other reports as available.

Performance requirements must include:

- compliance limits for:
  - bacteria levels
  - nutrients
  - pH
  - silt control
  - vermin protection
  - overflow discharge requirements
- requirements established using relevant Australian standards, codes and local authority plans, including:
  - cover
  - discharge
  - flow conditions
  - pipe grades.

Tank type and location may include:

- tank type:
  - concrete
  - fibreglass

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- metal
- polymer
- other approved materials
- tank location may include:
  - above-ground
  - in-ground.

Layout of pipework systems:

- may include:
  - gravity systems
  - pumped systems
- should not unduly affect building integrity and aesthetic appeal
- should have principles of economy, serviceability, durability and fit for use.

Fittings, valves and controls include:

- backflow prevention devices
- inspection openings
- irrigation control systems
- isolating valves
- level indicators
- pump controls.

First-flush systems may include:

- electronic
- float-activated
- mechanical
- volume-activated.

Filtration systems may include:

- overflow devices
- sand
- screens
- settlement tanks
- strainers.

Water contamination solutions may include:

- disinfection
- ultraviolet.

Pipe size calculations must include:

- determination of flow
- interpretation of design charts and tables

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- pipe sizing calculations
- reduced level calculations.

Materials may include:

- copper (Cu)
- polyethylene (PE)
- polypropylene (PP)
- polybutylene (PB)
- unplasticised polyvinyl chloride (PVC-U)
- other approved material.

Jointing methods may include:

- brazing
- compression joints
- electrofusion welding
- mechanical joints
- solvent cement
- threading
- other approved jointing methods.

Pipe supports may include:

- anchors
- bedding
- bracket spacing
- concrete support
- corrosion protection
- manufacturer-recommended specific fixings
- material requirements
- provision for expansion
- saddles.

Pump and ancillary requirements may include:

- automatic controls
- pump duties
- corrosion-resistant materials
- level controls and alarms
- pump selection and pump sizing, based on:
  - flow
  - velocity
  - lift
  - probable simultaneous demands.

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Installation requirements may include:

- pipe protection, which may include:
  - cover
  - corrosion
  - impact
- fire rating
- level of workmanship
- manufacturer-recommended specific fixings
- pipe support
- provision for expansion
- serviceability and access.

Rainwater reuse systems must include:

- roof water collection
- storage may include:
  - tanks
  - open in-ground (dam)
- water treatment
- pumps
- approved drinking and non-drinking use.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient use of material
  - efficient energy use/capital outlay comparison
  - water use
  - evaporation
  - local environment consideration
  - overflow disposal/reuse
  - consideration of the Green Building Council of Australia rating scheme
  - selecting appropriate components to ensure minimal environmental impact.

Plans:

- may include:
  - axonometrics
  - cross-sections
  - details
  - elevations
  - isometrics

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- schematics
- may be produced using:
  - computer generation
  - drawing equipment.

Specification may include:

- backflow prevention
- flow requirements
- jointing
- manufacturer requirements
- materials
- residual pressures
- safety (WHS)
- specialised components
- storage
- support
- testing
- valve selection
- water treatment
- workmanship.

Testing must include:

- air pressure
- backflow protection
- defect inspection
- drainage inspection
- hydrostatic
- performance:
  - flow
  - pressure
- water quality
- quality assurance (QA) audit.

Commissioning schedule must include:

- balancing disposal system
- flow and pressure adjustments
- leak check
- pressure test
- pump settings
- safety requirements
- system certification
- system defects
- system flushing

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- system functions as per design
- system purge
- valve operation
- ventilation
- vermin control.

Operation and maintenance manual may include:

- as installed drawings
- certification documentation
- maintenance schedules
- manufacturer brochures
- ongoing maintenance requirements
- pump maintenance
- regular inspections
- results of commissioning test
- safety management system
- system detail, setting and operations
- valve function
- system operational parameter adjustments and checks, including:
  - disinfection
  - first flush devices
  - pH
  - silt control
  - suspended solids
  - water quality.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPPS5027A Design irrigation systems

Modification History

Changes to unit descriptor, application, performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPPS5007A

Unit Descriptor

This unit of competency specifies the outcomes required to design irrigation systems to relevant Australian standards, codes, the National Construction Code (NCC) and other relevant legislative requirements to meet occupier needs and industry standards.

Application of the Unit

This unit of competency supports development of skills and knowledge required for competent workplace performance in a consultancy or supervisory capacity in relation to the design of irrigation systems for residential, commercial, industrial, sporting and agricultural properties with or without connection to reticulated supply.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	**Evaluate design parameters.**	1.1	***Scope of work*** for irrigation systems is established.
		1.2	***Design requirements*** are determined from relevant Australian standards, codes, plans, specifications and client brief.
		1.3	***Cost-benefit analysis*** is conducted comparing a range of pipe materials and system designs.
		1.4	***Statutory and regulatory requirements and relevant Australian standards and codes*** for the design of irrigation systems are interpreted, analysed and applied.
		1.5	***Manufacturer requirements*** and trade and technical manuals are interpreted.
		1.6	Additional research, including a ***desktop study***, is conducted to outline design parameters.
		1.7	***Flow and pressure tests*** are conducted.
		1.8	***Water sources, volumes and areas to be irrigated*** are established.
		1.9	***Soil types*** are analysed and categorised, and impacts on irrigation systems are documented.
		1.10	Factors that contribute to quality, safety and time efficiency are determined.
		1.11	***Performance requirements*** are established, considering safety of system users or building occupants.

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2	**Plan and detail system components.**	2.1	***Layout of pipework systems*** and type and location of ***fittings, valves and controls*** are planned.
		2.2	Type, location and requirements for ***backflow prevention devices*** are detailed.
		2.3	Pipe sizes, velocities, flows and pressures are calculated for a range of applications.
		2.4	Approved ***materials*** and ***jointing methods*** for irrigation systems are specified.
		2.5	***Sections and components of the irrigation system*** are detailed.
		2.6	***Pipe supports*** are designed for a range of applications.
		2.7	***Pump enclosure and control requirements*** are sized and detailed.
		2.8	***Installation requirements*** are specified for irrigation management system.
		2.9	Water storage requirements are determined.
		2.10	Allowance for pipe movement is made.
3	**Design and size systems.**	3.1	Irrigation systems are designed for a range of residential, commercial, industrial, sporting and agricultural ***applications***.
		3.2	Range of ***delivery systems and layout*** are designed.
		3.3	Irrigation systems are designed and sized using calculations and computer software packages.
		3.4	Required water application is determined to establish and maintain plant life.
		3.5	***Sustainability principles and concepts*** are applied throughout the design process.
4	**Prepare documentation.**	4.1	Client brief of the desired design is prepared.
		4.2	***Plans*** and ***specifications*** are prepared for a range of irrigation systems.

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4.3 ***Testing*** and ***commissioning schedule*** is prepared.

4.4 ***Operation and maintenance manual*** is produced.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - communicate with others to ensure safe and effective work practices
  - confirm job specifications and client requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- literacy skills to:
  - prepare written documentation, including:
    - operation and maintenance manual
    - plans, specifications and schedules
  - read and interpret:
    - plans, specifications, drawings and design briefs
    - standards and manufacturer requirements and manuals
    - statutory and regulatory requirements
- initiative and enterprise skills to develop creative and responsive approaches
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - research, collect, organise and understand information relating to the design of irrigation systems
  - take initiative and make decisions
- problem-solving skills to analyse requirements, consider options and design an appropriate system
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to design irrigation systems to National Construction Code, relevant Australian standards, and other relevant legislative requirements
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- application of National Construction Code or relevant Australian standards and codes,

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manufacturer specifications, and operating procedures relevant to the sector
- common terminology and definitions used in the design of irrigation systems
- nature of materials used and effects of performance under various conditions
- principles of technology used in design of irrigation systems for a range of applications
- work health and safety (WHS) requirements, including relevant statutory regulations, codes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to, as a minimum, provide evidence of the ability to:

- design, size and document layout details of an irrigation system, including a specification for a:
  - sports oval incorporating stormwater collection and use, with a mains pressure drinking water top-up and with chemical additives
  - a landscaped area for a mixed development site connected to a main pressure recycled (non-drinking) water main
- evaluate and document design parameters to relevant Australian standards and codes, and regulatory, client and manufacturer requirements.
- plan and detail system components that include:
  - backflow prevention devices
  - irrigation management-control system
  - pumping requirements
  - water delivery outlets
  - piping requirements
- design and size two irrigation systems, using appropriate calculations and computer software for specific applications
- prepare testing and commissioning schedules
- prepare operation and maintenance manuals
- apply sustainability principles and concepts throughout the design
- communicate with others to ensure safe and effective work site operations.

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Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions, including design brief drawings, specifications, codes, design concepts and construction schedules
- tools and equipment appropriate to applying safe work practices, including computers, software and calculators
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and

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environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Scope of work:

- must include:
  - interpretation of plans and specifications
  - sizing and documenting layout irrigation systems and documenting layout irrigation systems for applications, including residential, sporting and agricultural properties
- may be for new projects or an existing structure being renovated, extended, restored or maintained.

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Design requirements must include:

- architectural plans
- backflow requirements
- interpretation and application of irrigation services, drawings and symbols
- irrigation management system
- owner requirements
- precipitation and evaporation rates
- pumping requirements
- required water application to establish and maintain plant life
- source of irrigation water
- sprinkler head spacings
- system requirements
- water storage requirements.

Cost-benefit analysis:

- compares the range of suitable materials and system choices available to enable cost-effective choices to be made without compromising integrity of project
- may include:
  - design styles
  - expected design life
  - labour costs
  - material costs
  - required water application to establish and maintain plant life
  - safety factors
  - speed of installation
  - suitability of materials
  - system choices
  - use of recycled or alternative water.

Statutory and regulatory requirements and relevant Australian standards and codes may include:

- Acts, regulations and commonwealth, state or territory, and local government requirements
- AS/NZS3500 National plumbing and drainage
- AS2200 Design charts for water supply and sewerage
- National Construction Code
- state or territory health department requirements
- other relevant Australian standards or codes.

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Manufacturer requirements may include:

- irrigation management system
- material specifications
- pump tables
- sprinkler head performance
- sub-surface irrigation
- technical and trade manuals.

Desktop study may include collection and interpretation of data for design purposes in:

- architectural and building plans
- site layout plans, which may include:
  - sports ovals
  - golf courses
  - residential, commercial, industrial and agricultural properties
  - local government parks
- manufacturer data
- documents, which may include:
  - applications
  - brochures
  - forms
  - policies
  - other reports as available.

Flow and pressure tests may include:

- interpretation of flow and pressure tests
- on-site measurement of flows (l/s), velocity (m/s) and pressure (kPa).

Water sources, volumes and areas to be irrigated may include:

- sources:
  - drinking water
  - non-drinking (recycled) water
  - rain water
  - grey water
  - creeks
  - dams
  - lakes
  - rivers
  - streams
  - tanks

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- other approved water sources
- volumes and areas:
  - amount and duration of water supply
  - areas to be irrigated
  - number of control stations required
  - total amount and flow rate required for each control station.

Soil types may include:

- gravels
- light, medium and heavy clays
- loams
- rock
- sands.

Performance requirements may include:

- flow, velocity, pressure and discharge requirements, established using relevant Australian standards, codes and manufacturer information
- required water application to establish and maintain plant life.

Layout of pipework systems:

- may include:
  - distribution
  - dual feed systems
  - range pipes
  - ring main
  - single pipe
  - control stations
- should not unduly affect aesthetic appeal and building integrity
- should have principles of economy, serviceability, durability and fit for use applied.

Fittings, valves and controls may include:

- fittings:
  - bends
  - elbows
  - sprinkler heads
  - tees
  - unions
- valves:

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- backflow prevention
- excess pressure
- isolating
- pressure limiting
- pressure reduction
- strainers
- controls:
  - irrigation management system
  - control stations
  - control wiring
  - nodes.

Backflow prevention devices may include:

- double-check valve assembly (DCV)
- dual-check valve with intermediate vent (DuCV)
- pressure type vacuum breaker (PVB)
- reduced pressure zone device (RPZD)
- registered air gap (RAG)
- registered break tank (RBT)
- reduced pressure detector assembly (RPDA)
- reduced pressure zone device (RPZD)
- other approved backflow prevention devices
- may be located as:
  - individual protection
  - zone protection
  - containment protection.

Materials may include:

- composite pipework
- copper (Cu)
- cross-linked polyethylene (PE-X)
- polypropylene (PP)
- polybutylene (PB)
- polyvinyl chloride (PVC)
- other relevant materials.

Jointing methods include:

- brazing
- compression
- electrofusion welding
- flaring
- mechanical joints

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- rubber ring joints
- screwing
- soldering
- other approved jointing methods.

Sections and components of the irrigation system must include:

- irrigation stations:
  - number, size, area, volume of water required, delivery requirements, operation and activation of stations, sprinkler patterns, location and distribution of sprinkler heads, obstacle avoidance, water minimisation, waste minimisation and timing
- manifold systems:
  - manifolds to stations, headers, branches, timers, isolators, servo valves, electronics, power supplies and manual activation
- sensors:
  - moisture sensors, soil sensors, temperature sensors, humidity sensors, weather stations and computer automation
- automatic controls:
  - station controllers, servo valves, isolating valves, water tractors and timers
- sprinklers, drippers and irrigators:
  - sprinkler heads, sprinkler flows, impact sprinklers, gear-driven sprinklers, water tractors, water cannons, tape drippers, individual drippers, flow controlled drippers, in-ground irrigation tapes and root inhibitor systems
- sprinkler patterns:
  - head to head, square, triangular, circular, quarter overlap, half overlap, full overlap, double overlap and other overlap patterns.

Pipe supports may include:

- thrust blocks
- bedding
- bracket spacing
- corrosion protection
- cover
- manufacturer-recommended specific fixings
- material requirements
- provision for pipe movement.

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Pump enclosure and control requirements may include:

- acoustic performance
- automatic change-over
- automatic controls
- dual-pump provision
- impeller sizing
- inlet and outlet design requirements
- installation and mounting requirements
- irrigation management control system
- pressure gauges
- pump contols
- pump selection
- pump sizing
- pump housing
- space requirements
- valve requirements
- variable speed control.

Installation requirements may include:

- pipe connection:
  - bedding and backfilling
  - corrosion
  - cover
  - ground stability
  - impact
- level of workmanship
- manufacturer recommendations
- pipe support
- provision for pipe movement
- serviceability and access.

Applications:

- may include:
  - agricultural crops
  - garden irrigation
  - golf courses
  - greenhouses
  - lawn watering
  - local government parks
  - nurseries
  - sports ovals

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- should also cover:
  - individual crop water requirements
  - types of plants and their respective crop factors.

Delivery systems and layout may include:

- main delivery
- number and design of control stations
- design includes:
  - avoiding obstacles
  - irregular shapes
  - minimising water wastage
  - range of irrigation applications
- range pipes
- ring mains
- size and water delivery of sprinklers
- sprinkler head patterns and placement.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - selecting appropriate material to ensure minimal environmental impact
  - efficient use of material
  - efficient energy usage/capital outlay comparison
  - water efficiency
  - reuse of water, such as rainwater, grey water and recycled non-drinking water
  - consideration of the Green Building Council of Australia rating scheme.

Plans:

- may include:
  - axonometrics
  - cross-sections
  - details
  - elevations
  - isometrics
  - schematics
  - sections
- may be produced using:
  - computer generation

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- drawing equipment.

Specification may include:

- bedding
- flow requirements
- irrigation management control system
- jointing
- manufacturer requirements
- materials
- pumps
- residual pressures
- safety (WHS)
- specialised components
- sprinkler head selection
- storage tanks
- support
- testing
- valve selection
- water treatment
- workmanship.

Testing may include:

- defect inspection
- hydrostatic
- mains pressure
- performance
- quality assurance (QA) audit.

Commissioning schedule may include:

- system certification
- flow test
- leak check
- pressure test
- system purge
- system defect
- system functions as per design
- valve and system operation.

Operation and maintenance manual includes:

- as installed drawings
- results of commissioning test
- certification documentation
- maintenance schedules

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- manufacturer brochures and technical information
- operational procedures
- valve function.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPPS5028A Design trade waste pre-treatment systems

Modification History

Changes to unit descriptor, performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPPS5008A

Unit Descriptor

This unit of competency specifies the outcomes required to design trade waste pre-treatment systems for commercial and industrial premises prior to discharge to authority's point of sewer connection. The unit requires identification of appropriate installation details and preparation of specifications.

Application of the Unit

This unit of competency supports development of skills and knowledge required for competent workplace performance in a consultancy or supervisory capacity in relation to plumbing services and hydraulics.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	**Evaluate design parameters.**	1.1	***Scope of work*** is established for trade waste pre-treatment systems prior to discharge to authority's point of sewer connection.
		1.2	***Design requirements*** are determined from relevant Australian standards, codes, plans, specifications, authorities' requirements and client brief.
		1.3	***Statutory and regulatory requirements and relevant Australian standards and codes*** for the design of trade waste pre-treatment systems are analysed and applied.
		1.4	***Trade waste applications*** are analysed and a ***cost-benefit analysis*** is conducted, comparing a range of pipe materials and system designs.
		1.5	***Manufacturer requirements*** and trade and technical manuals are interpreted.
		1.6	Additional research, including a ***desktop study***, is conducted to outline design parameters.
		1.7	***Performance requirements*** are established, considering safety of system users or building occupants.
2	**Plan and detail system components.**	2.1	***Layout of pipework systems*** and type, and location of ***fittings*** and controls are planned.
		2.2	***Solid removal systems*** are planned and detailed.
		2.3	***Grease and oil interceptors***, ***neutralising chambers*** and ***wash-down areas*** incorporating stormwater exclusion are planned and detailed.

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		2.4	Diffused air flotation systems are planned and detailed.
		2.5	***Bacterial treatment processes*** and ***combined and specialised treatment processes*** are detailed for a range of commercial and industrial applications.
		2.6	General housekeeping procedures are incorporated to minimise discharge of trade waste.
		2.7	***System calculations*** are performed for a range of applications.
		2.8	***Pumpwell, pumps, controls and equipment requirements*** are sized and detailed.
		2.9	***Pipe supports*** are designed for a range of applications.
		2.10	Approved ***materials***, ***jointing methods*** and ***installation requirements*** for trade waste pre-treatment systems are specified.
3	**Design and size systems.**	3.1	Trade waste pre-treatment systems are designed and sized for a range of applications using calculations and ***computer software packages***.
		3.2	***Sustainability principles and concepts*** are applied throughout the design process.
4	**Prepare documentation.**	4.1	Client brief of the desired design is prepared.
		4.2	***Plans*** and ***specifications*** are prepared for a range of trade waste pre-treatment systems.
		4.3	***Testing*** and ***commissioning schedule*** is prepared.
		4.4	***Operation and maintenance manual*** is produced, including information on how to properly and safely maintain the system.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - communicate with others to ensure safe and effective work practices
  - confirm job specifications and client requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to develop creative and responsive approaches
- literacy skills to:
  - prepare written documentation, including:
    - operation and maintenance manual
    - plans, specifications and schedules
  - read and interpret:
    - plans, specifications, drawings and design briefs
    - standards and manufacturer requirements and manuals
    - statutory and regulatory requirements
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - research, collect, organise and understand information relating to the design of trade waste pre-treatment systems
  - take initiative and make decisions
- problem-solving skills to analyse requirements, consider options and design an appropriate system
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to recommend general housekeeping procedures to minimise trade waste
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- relevant Australian standards, codes, manufacturer specifications, National Construction Code (NCC), relevant authorities' requirements and operating procedures relevant to the

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sector
- hazards associated with devices and systems used in the hydraulic sector
- design of the options for the pre-treatment of trade waste
- approved installation methods for trade waste pre-treatment systems
- key features of work plans and specifications
- nature of materials and effect of their performance in a variety of conditions
- organisational quality procedures and processes
- terminology and definitions used in hydraulic design
- work health and safety (WHS) requirements, including relevant statutory regulations, codes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide, as a minimum, evidence of the ability to:

- design, size and document the installation and layout details for a trade waste pre-treatment system, including a specification for two of the following:
  - commercial kitchen
  - vehicle mechanical workshop
  - commercial laundry
  - metal plating process
- evaluate and document design parameters to relevant Australian standards, codes, client information, local authorities' trade waste policy, and manufacturer installation requirements
- evaluate health risks associated with the trade waste system
- plan and detail system components, including pre-treatment systems and piping systems
- design and size trade waste systems
- design and size wash-down and stormwater exclusion systems
- prepare plans and specifications for the trade waste pre-treatment installations to industry standards
- prepare schedules for testing and commissioning
- produce operation and maintenance manuals
- apply sustainability principles and concepts throughout installations
- communicate with others to ensure safe and effective workplace operations.

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Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions, including design brief drawings, specifications, codes, design concepts and construction schedules
- tools and equipment appropriate to applying safe work practices, including computers, software and calculators
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and

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environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Scope of work:

- must include:
  - interpreting plans and specifications
  - sizing and documenting layout of trade waste pre-treatment systems for commercial and industrial applications
- may be for new projects or an existing structure being renovated, extended, restored or maintained.

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Design requirements must include:

- architectural plans
- building specifications
- cleaning and maintenance procedures
- installation requirements
- odour control
- owner requirements
- pipework identification
- sizing
- trade waste treatment
- ventilation.

Statutory and regulatory requirements and relevant Australian standards and codes may include:

- AS/NZS3500 National plumbing and drainage
- AS2200 Design charts for water supply and sewerage
- commonwealth, state or territory and local governments requirements
- National Construction Code
- other relevant Australian standards and codes.

Trade waste applications may include:

- chemical facilities
- commercial and industrial facilities that produce a liquid waste stream
- commercial and industrial laundry
- food preparation facilities
- laboratories
- motor vehicle workshops
- photography development facilities
- wash-down facilities.

Cost-benefit analysis:

- compares the range of suitable materials and system choices available to enable cost-effective choices to be made without compromising integrity of project
- may include:
  - design styles
  - energy costs
  - expected design life
  - labour costs
  - material costs
  - safety factors

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- speed of installation
- suitable materials
- authorities' requirements.

Manufacturer requirements may include:

- containment
- design and installation
- installation space
- material specifications
- pipe sizing
- pump installation
- storage systems
- technical and trade manuals
- ventilation.

Desktop study may include collection and interpretation of existing data for design purposes in:

- architectural and building plans
- developer plans
- manufacturer data
- documents, which may include:
  - applications
  - brochures
  - forms
  - policies
  - other reports as available
- trade waste publications.

Performance requirements must:

- establish acceptable discharge standards for the relevant authority
- comply with relevant Australian standards, codes and local authorities' requirements.

Layout of pipework systems:

- may include:
  - location of pipework (fire rating of enclosure)
  - trade waste plumbing and drainage
  - pumped systems
  - accessibility
- should not unduly affect building integrity and aesthetic appeal
- should have principles of economy, serviceability, durability and fit for use applied.

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Fittings may include:

- bends
- junctions
- reflux valves
- inspection openings
- expansion joints.

Solid removal systems may remove:

- bone
- dirt
- grit
- metal
- paper
- plastic
- rubbish
- sand
- silt
- wood
- other solid contaminants.

Grease and oil interceptors may include:

- coalescing plate separators
- dissolved air flotation (DAF)
- grease traps
- skimmers
- vertical separators.

Neutralising chambers may neutralise:

- acid
- alkaline
- chemicals.

Wash-down areas may include:

- bin
- commercial and industrial wash-down processes that may or may not require stormwater diversion
- floor
- vehicle
- machinery.

Bacterial treatment processes may include:

- aerobic
- anaerobic

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- facultative and specialised bacteria for the removal of grease and other contaminants.

Combined and specialised treatment processes may include:

- bacterial treatment
- cooling pits
- diffused air flotation systems
- neutralising chambers
- solid removal systems
- specialised treatment.

System calculations must include:

- calculating gradient
- interpreting design charts and tables
- calculating pipe sizing
- calculating reduced level
- determining flow and fixture loadings
- sizing treatment system
- storage tank capacity.

Pumpwell, pumps, controls and equipment requirements may include:

- access covers
- automatic controls
- capacity
- chains
- corrosion-resistant materials
- detailing
- emergency storage
- high and low-level water controls and alarms
- impeller sizing
- inlet and outlet design requirements
- installation and mounting requirements
- ladder access
- odour control
- macerator requirements
- pump selection
- pump sizing
- pumpwell sizing
- space requirements
- step irons
- valve requirements
- ventilation
- warning system.

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Pipe supports include:

- anchors
- bedding
- bracket spacing
- concrete support
- corrosion protection
- cover
- hanging brackets
- manufacturer-recommended specific fixings
- material requirements
- saddles
- provision for expansion
- wall and ceiling brackets.

Materials may include:

- pipes may include:
  - cast iron or epoxy lined
  - earthenware or vitrified clay pipe (VCP)
  - polyethylene (PE)
  - polypropylene (PP)
  - other approved material
- fittings and fixtures, including sound attenuation requirements.

Jointing methods may include:

- electrofusion welding
- mechanical joints
- rubber ring
- threading.

Installation requirements may include:

- bedding
- pipe protection, which may include:
  - cover
  - corrosion
  - impact
- fire rating
- level of workmanship
- manufacturer-recommended specific fixings
- pipe support
- provision for expansion
- serviceability and access.

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Computer software packages include:

- proprietary design software
- manufacturer software.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - selecting appropriate material to ensure minimal environmental impact
  - efficient use of material
  - efficient energy usage/capital outlay comparison
  - effect on the environment due to overflow or leakage
  - material selected to convey the type of discharge
  - water efficiency.

Plans:

- may include:
  - axonometrics
  - cross-sections
  - details
  - elevations
  - isometrics
  - schematics
  - sections
- may be produced using:
  - computer generation
  - drawing equipment.

Specification may include:

- access chambers (manholes)
- bedding
- commissioning
- concrete support and detailing specialised components
- jointing
- manufacturer requirements
- materials
- pumps

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- safety (WHS)
- support
- testing
- workmanship.

Testing may include:

- air pressure
- compliance with authorities' discharge requirements
- drainage inspection
- hydrostatic
- performance
- quality assurance (QA) audit.

Commissioning schedule may include:

- checking for foreign material
- checking system defects
- checking that system functions as per design
- containment
- leak check
- operational commissioning
- pump commissioning
- system certification
- treatment system commissioning.

Operation and maintenance manual may include:

- as installed drawings
- certification documentation
- results of commissioning test
- maintenance schedules
- manufacturer brochures and technical information
- odour control
- regular treatment system maintenance
- regular water quality testing
- ventilation
- water auditing.

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Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPPS5030A Design pump systems

Modification History

Changes to unit descriptor, performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPPS5010A

Unit Descriptor

This unit of competency specifies the outcomes required to undertake the specification, selection and sizing of pumps and the design of associated piping and components for inclusion in hydraulic systems.

Application of the Unit

This unit of competency supports development of skills and knowledge required for competent workplace performance in a consultancy or supervisory capacity in relation to plumbing services and hydraulics.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	**Evaluate design parameters.**	1.1	***Scope of work*** is established for ***pump*** system requirements for wide span and high-rise building projects.
		1.2	***Pump duties*** are established.
		1.3	***Design requirements*** are determined from plans, specifications, system demands and client brief.
		1.4	***Cost-benefit and life cycle analysis*** is conducted comparing a range of pump alternatives, materials and system designs.
		1.5	***Statutory and regulatory requirements*** and ***Australian standards and codes*** for the design of pump systems are analysed, interpreted and applied.
		1.6	***Manufacturer requirements*** and trade, technical and sizing manuals are interpreted.
		1.7	Additional research, including a ***desktop study***, is conducted to outline design parameters.
		1.8	***Flow and pressure tests*** of hydraulic system are conducted.
		1.9	***Performance requirements*** are established, considering safety of system users or building occupants.
2	**Plan and detail system components.**	2.1	***Pump, controls and pumproom requirements*** are sized and detailed.
		2.2	***Layout of pipework systems*** and type and location of ***fittings***, ***valves*** and controls are planned.
		2.3	Pipe sizes, velocities, flows and pressures are calculated for a range of applications.
		2.4	***Energy sources*** are specified for a range of hydraulic pumping applications.
		2.5	***Pump plinths*** and ***pump mountings*** are designed for a range of applications.
		2.6	Pump impellers are sized and selected.

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		2.7	Approved ***materials***, ***jointing methods*** and ***installation requirements*** are specified.
		2.8	Allowance for vibration is provided.
3	**Design and size systems.**	3.1	Pump systems are designed for a range of wide span and high-rise building applications.
		3.2	Pump acoustic performance is evaluated.
		3.3	Net positive suction head calculations are performed.
		3.4	Design principles are applied for optimal performance of pump systems.
		3.5	Range of ***delivery systems*** is designed.
		3.6	Pump systems are designed and sized using calculations and computer software packages.
		3.7	***Sustainability principles and concepts*** are applied throughout the design process.
4	**Prepare documentation.**	4.1	Client brief of the desired design is prepared.
		4.2	***Plans*** and ***specification*** details are prepared for a range of pump systems.
		4.3	***Testing*** and ***commissioning schedule*** is prepared.
		4.4	***Operation and maintenance manual*** is produced, including information on how to properly and safely maintain the system.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - liaise with others to publish reports
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- literacy skills to:
  - apply design concepts and principles relating to hydraulic systems and undertake a literature review
  - produce report to a professional standard
  - read and interpret:
    - documents and resources identified through the literature review
    - plans, specifications and drawings
    - standards, manufacturer requirements and manuals
    - statutory and regulatory requirements
    - other relevant documentation
  - undertake document analysis, including impacts and evaluation results
- initiative and enterprise skills to develop creative and responsive approaches
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - research, collect, organise and understand information relating to the design of pump systems
  - take initiative and make decisions
- problem-solving skills, including the ability to:
  - identify typical faults and action required to rectify problems
  - analyse requirements, consider options and design an appropriate system
- technical skills to:
  - design associated piping and components for hydraulic systems
  - specify, select and size pumps
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

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Required knowledge

- hazards associated with pumping equipment used in hydraulic systems
- key features of work plans and specifications
- approved installation methods for pump systems
- principles of technology in the design of pump installations for hydraulic systems
- relevant Australian standards, codes, manufacturer specifications, National Construction Code (NCC) and operating procedures relevant to the sector
- research methods, report writing and publishing, including who to contact and how to publish reports
- terminology and definitions used in pump installation
- work health and safety (WHS) requirements, including relevant statutory regulations, codes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to, as a minimum provide evidence of the ability to:

- design, size and document required pumping systems for the hydraulic services installation required for a high-rise mixed development building to a minimum of 29 floors, inclusive of a basement, to include fixtures on each floor level (fixtures are included in the basement) and a wide span project (such as a school or industrial complex) to include:
  - applying sustainability principles and concepts throughout the design of pump system
  - evaluating and documenting design parameters to relevant Australian standards, codes, and hydraulic system client, regulatory and manufacturer requirements
  - planning and detailing system components, including:
    - ancillaries
    - control panel
    - fittings
    - flow switches
    - mounting
    - piping
    - plinths
    - pressure switches
    - pump duty
  - complying with WHS regulations applicable to workplace operations

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- applying organisational quality procedures and processes
- using appropriate calculations and computer software
- developing a cost-benefit lifecycle analysis for a range of systems
- preparing plans and specification
- preparing a testing and commissioning schedule
- preparing an operation and maintenance manual
- communicating with others to ensure safe and effective work site operations
- producing safety and emergency procedures.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions, including design brief drawings, specifications, codes, design concepts and construction schedules
- tools and equipment appropriate to applying safe work practices, including computers, software and calculators
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

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- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the

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candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Scope of work:

- must include:
  - interpretation of plans and specifications
  - sizing and documenting layout of pump systems for wide span and high-rise building projects
- may be for new projects or an existing structure being renovated, extended, restored or maintained.

Pump types may include:

- centrifugal
- circulating
- constant flow variable speed
- macerator
- multiple stage
- piston
- positive displacement
- submersible
- vacuum
- variable speed control.

Pump duties must include:

- constant pressure
- flow rate
- head
- velocity.

Design requirements may include:

- acoustic performance
- architectural plans
- available flow and pressure from authority's main
- building specifications
- fire safety
- owner's requirements
- pipework identification
- pump duty
- sizing of pipework
- ventilation
- vibration
- viscosity of fluids.

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Cost-benefit and life cycle analysis:	• includes balancing initial cost with durability, longevity, maintenance and ongoing fuel and energy cost requirements
	• compares the range of suitable materials, pumps and system designs available to enable cost-effective choices to be made without compromising integrity of project
	• may include:
	  • design
	  • energy costs
	  • expected design life
	  • labour costs
	  • material costs
	  • safety factors
	  • speed of installation
	  • suitable materials.

Statutory and regulatory requirements may include:	• Acts and regulations, and commonwealth, state or territory, and local government requirements.
Australian standards and codes may include:	• AS/NZS3500 National plumbing and drainage • AS2419 Fire hydrant installations – system design, installation and commission • AS/NZS1547 On-site domestic wastewater management • AS2200 Design charts for water supply and sewerage • National Construction Code • other relevant Australian standards.
Manufacturer requirements may include:	• material installation specifications • pump tables • pipe sizing • recommended installation and fixings for pipework • technical and trade manuals • ventilation requirements.
Desktop study may include collection and interpretation of data	• architectural and building plans • developer plans

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for design purposes in:	• manufacturer data
	• documents, which may include:
	  • applications
	  • brochures
	  • forms
	  • policies
	  • other reports as available.

Flow and pressure tests may include:	• on-site measurement of flow (l/s), velocity (m/s) and pressure (kPa).
Performance requirements include:	• flow, velocity, pressure and discharge requirements, to satisfy the requirements of the hydraulic system.
Pump, controls and pumproom requirements may include:	• acoustics • ancillaries • automatic controls • inlet and outlet design • installation and mounting • plinths • pump sizing and selection • space • ventilation • vibration.
Layout of pipework systems may include:	• access • identification • insulation • isolation • maintenance • principles of economy, serviceability, durability and fit for use • replacement.

Fittings and valves may include:	• fittings:
	  • bends
	  • flanges
	  • inlet and outlet pressure gauges

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- tees
- unions
- valves:
  - air relief
  - excess pressure
  - isolating
  - non-return
  - pressure limiting
  - pressure reduction
  - strainers
  - vibration couplings.

Energy sources may include:

- diesel and diesel-electric generator sets
- electrical, single phase and three-phase
- petrol.

Pump plinth bases designed to resist forces exerted by pump may include:

- concrete
- masonry
- timber
- steel.

Pump mountings may include:

- anchoring bolts
- inertia pads
- rubber and synthetic
- spring loaded
- vibration mounts.

Materials:

- piping may include:
  - copper (Cu)
  - galvanised steel
  - stainless steel
  - polyethylene (PE)
  - polypropylene (PP)
  - polybutylene (PB)
  - other approved material
- pumps may include:
  - cast iron
  - bronze

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- stainless steel
- other appropriate materials.

Jointing methods may include:

- brazing
- electrofusion welding
- mechanical joints
- other approved jointing method.

Installation requirements may include:

- pipe protection, which may include:
  - corrosion
  - impact
- fire rating
- level of workmanship.
- manufacturer-recommended specific fixings
- pipe support
- provision for vibration
- serviceability and access
- thrust brackets.

Delivery systems may include:

- circulation
- constant flow variable speed pump
- hydropneumatic
- lift
- pressure
- rising main
- vacuum.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - selecting appropriate material to ensure minimal environmental impact
  - efficient use of material
  - efficient energy usage/capital outlay comparison
  - effect on the environment due to pump or pipe failure
  - pump efficiency.

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Plans:

- may include:
  - axonometrics
  - cross-sections
  - details
  - elevations
  - isometrics
  - schematics
  - sections
- may be produced using:
  - computer generation
  - drawing equipment.

Specification may include:

- acoustic performance
- fire safety
- jointing
- manufacturer requirements
- materials
- pump duty
- residual pressures
- safety (WHS)
- specialised components
- support
- testing
- valve selection
- vibration control
- workmanship.

Testing may include:

- defect inspection
- hydrostatic
- performance
- quality assurance (QA) audit.

Commissioning schedule may include:

- system certification
- exhaust pipe check
- flow check
- leak check
- pressure check
- system purge
- system defects

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- system functions as per design
- valve operation
- acoustic performance.

Operation and maintenance manual may include:

- as installed drawings
- results of commissioning test
- certification documentation
- emergency shut-down procedures
- maintenance schedules
- manufacturer brochures and technical information
- valve function.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPPS5032A Design siphonic stormwater drainage systems

Modification History

Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPPS5012A

Unit Descriptor

This unit of competency specifies the outcomes required to design siphonic stormwater drainage systems, determine installation details, and prepare specifications for a range of residential, commercial and industrial buildings.

Application of the Unit

This unit of competency supports development of skills and knowledge required for competent workplace performance in a consultancy or supervisory capacity in relation to plumbing services and hydraulics.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	**Evaluate design parameters.**	1.1	***Scope of work*** is established for siphonic stormwater drainage systems.
		1.2	***Design requirements*** are determined from relevant Australian standards, codes, plans, specifications and client brief.
		1.3	***Siphonic system attributes*** are evaluated and ***cost-benefit analysis*** is conducted, comparing a range of pipe materials and system designs.
		1.4	***Statutory and regulatory requirements and relevant Australian standards and codes*** for the design of siphonic stormwater drainage systems are analysed and applied.
		1.5	Stormwater design manuals, ***manufacturer requirements*** and trade and technical manuals are interpreted.
		1.6	Additional research, including a ***desktop study***, is conducted to outline design parameters.
		1.7	Factors that contribute to quality, safety and time efficiency are determined.
		1.8	***Performance requirements*** are established, considering safety of system users or building occupants.
2	**Plan and detail system components.**	2.1	Siphonic stormwater drainage systems are integrated with the building structure.
		2.2	Volume of roof water and stormwater is calculated using a range of approved methods.
		2.3	***Layout of pipework systems***, and type and location of ***fittings*** are planned.
		2.4	***Pipe size and flow requirements are calculated*** for a range of applications according to stormwater collection requirements.
		2.5	***Pipe supports*** are designed for a range of applications.
		2.6	Approved ***materials and components***, ***jointing methods***

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			and ***installation requirements*** for siphonic stormwater drainage systems are specified.
3	**Design and size systems.**	3.1	Siphonic stormwater drainage systems are designed for a range of applications.
		3.2	Catchment areas are calculated, collection points determined, and siphonic systems sized.
		3.3	Siphonic stormwater drainage systems are designed and sized using calculations and ***computer software packages***.
		3.4	***Sustainability principles and concepts*** are applied throughout the design process.
4	**Prepare documentation.**	4.1	Client brief of the desired design is prepared.
		4.2	***Plans*** and ***specification*** are prepared for a range of siphonic stormwater drainage systems.
		4.3	***Testing*** and ***commissioning schedule*** is prepared.
		4.4	***Operation and maintenance manual*** is produced, including information on how to properly and safely maintain the system.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - communicate with others to ensure safe and effective work practices
  - confirm job specifications and client requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to develop creative and responsive approaches
- literacy skills to:
  - prepare documentation, including:
    - operation and maintenance manual
    - plans, specifications and schedules
  - read and interpret:
    - plans, specifications, drawings and design briefs
    - standards and manufacturer requirements and manuals
    - statutory and regulatory requirements
- numeracy skills to:
  - apply measurements and calculations
  - interpret data
- planning and organising skills to:
  - research, collect, organise and understand information relating to the design of siphonic stormwater systems
  - take initiative and make decisions
- problem-solving skills to analyse requirements, consider options and design an appropriate system
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
  - determine installation details for siphonic stormwater drainage systems
  - prepare specifications for siphonic stormwater drainage systems
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

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Required knowledge

- common terminology and definitions used in design of siphonic stormwater drainage systems for residential, commercial and industrial buildings
- drafting principles
- nature of materials used and effects of performance under various conditions
- procedures for estimating volume of stormwater run-off from rainwater collection areas
- principles of technology in the design of siphonic stormwater drainage systems
- requirements of state regulatory authorities, Australian standards and manufacturer specifications, including hazards identified in relation to devices and systems used
- work health and safety (WHS) requirements, including relevant statutory regulations, codes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to as a minimum provide evidence of the ability to:

- design, size and document the layout details, including a specification of a siphonic system for a site incorporating a high-rise mixed development building and a wide span project (such as a school) to include:
  - applying sustainability principles and concepts throughout
  - evaluating and documenting design parameters to relevant Australian standards, codes and manufacturer requirements for a range of siphonic stormwater drainage systems
  - evaluating health risks associated with the siphonic system
  - designing and sizing siphonic stormwater drainage systems using appropriate calculations and computer software
  - selecting materials and components for compliance, fit for purpose, durability, compatibility and cost-effectiveness
  - preparing testing and commissioning schedules
  - producing operation and maintenance manuals
  - communicating with others to ensure safe and effective workplace operations.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

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Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions, including design brief drawings, specifications, codes, design concepts and construction schedules
- tools and equipment appropriate to applying safe work practices, including computers, software and calculators
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and

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the practical requirements of the workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Scope of work must include:

- calculation of rainfall intensities in given catchment areas, including:
  - average rainfall intervals
  - meteorological information
  - rainfall intensities
  - stormwater collection area calculations
  - time and concentration
- interpretation of plans and specifications
- sizing and documenting layout of siphonic stormwater drainage systems for residential, commercial and industrial applications and for

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	either new projects or an existing structure being renovated, extended, restored or maintained.
Design requirements must include:	• owner requirements • architectural plans • building specifications • pipework identification • catchment area • approved point of discharge • acoustic performance.
Siphonic system attributes must include:	• availability • cost • installation requirements • risks • site conditions.

Cost-benefit analysis:	• compares range of suitable materials and system choices available to enable cost-effective choices to be made without compromising integrity of project
	• must include:
	  • design styles
	  • expected design life
	  • labour costs
	  • material costs
	  • safety factors
	  • speed of installation.

Statutory and regulatory requirements and relevant Australian standards and codes may include:	• AS/NZS3500 National plumbing and drainage • AS2200 Design charts for water supply and sewerage • commonwealth, state or territory requirements and local governments requirements • National Construction Code • other relevant Australian standards and codes.
Manufacturer requirements may include:	• material specifications • sizing tables

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- technical and trade manuals
- special siphonic drainage collection inlets.

Desktop study may include collection and interpretation of existing data for design purposes in:

- architectural and building plans
- manufacturer data
- developer plans
- other documents, including:
  - applications
  - brochures
  - forms
  - policies
  - other reports as available.

Performance requirements may include:

- pipe flow velocities, flow conditions and discharge requirements, established using relevant Australian standards, codes and local authorities' requirements.

Layout of pipework systems:

- must include:
  - acoustic performance
  - amenity of the building
  - clipping and pipe support
  - fireproofing
  - function of the building
  - impingement on floor heights
  - location of pipework (fire rating of enclosure)
  - materials to be used
  - size of penetrations
  - type of building structure
- should not unduly affect building integrity and aesthetic appeal
- should have principles of economy, serviceability, durability and fit for use applied.

Fittings may include:

- bends
- junctions.

Pipe size and flow requirement

- discharge

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calculations may include:

- flow
- manufacturers' tables
- sizing, according to relevant Australian standards and codes
- velocity
- volumes.

Pipe supports may include:

- anchors
- bracket spacing
- corrosion protection
- cover
- hanging brackets
- material requirements
- saddles
- wall and ceiling brackets.

Materials and components may include:

- appropriate materials specified, based on fit for purpose, durability, compatibility and cost-effectiveness, including:
  - copper (Cu)
  - polyethylene (PE)
  - polypropylene (PP)
  - stainless steel
  - other approved material
- components, may include:
  - clips
  - fasteners
  - fittings
  - pipework
  - siphonic collection inlets.

Jointing methods may include:

- brazing
- electrofusion welding
- mechanical joints
- rubber ring
- other approved jointing methods.

Installation requirements must include:

- pipe protection, which may include:
  - corrosion

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- impact
- fire rating
- level of workmanship
- manufacturer-recommended specific fixings
- pipe support
- provision for expansion
- serviceability and access.

Computer software packages may include:

- manufacturer software
- proprietary design software.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - selecting appropriate material to ensure minimal environmental impact
  - efficient use of material
  - efficient energy usage/capital outlay comparison
  - effect on the environment due to overflow or leakage
  - consideration of the Green Building Council of Australia rating scheme.

Plans:

- may include:
  - axonometrics
  - elevations
  - details
  - cross-sections
  - isometrics
  - schematics
  - sections
- may be produced using:
  - computer generation
  - drawing equipment.

Specification may include:

- commissioning
- bedding
- support

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- jointing
- manufacturer requirements
- materials
- testing
- workmanship
- work health and safety (WHS).

Testing may include:

- hydrostatic test
- inspection
- performance
- quality assurance (QA) audit.

Commissioning schedule may include:

- system certification
- checking for foreign material
- checking leaks
- cleaning grates
- system defects
- system functions as per design.

Operation and maintenance manual may include:

- as installed drawings
- certification documentation
- results of commissioning test
- maintenance schedules
- manufacturer brochures and technical information
- check for blockages
- leak detection
- regular inspection
- regular maintenance requirements.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

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Custom Content Section

Not applicable.

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CPCPPS5033A Design vacuum sewerage systems

Modification History

Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPPS5013A

Unit Descriptor

This unit of competency specifies the outcomes required to design vacuum sewerage systems, determine installation details, and prepare specifications for a range of residential, commercial and industrial buildings, using proprietary components.

Application of the Unit

This unit of competency supports development of skills and knowledge required for competent workplace performance in a consultancy or supervisory capacity in relation to plumbing services and hydraulics.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	**Evaluate design parameters.**	1.1	***Scope of work*** is established for vacuum sewerage systems designed for sewer infrastructure systems and high-rise building projects.
		1.2	***Design requirements*** are determined from relevant Australian standards, codes, plans, specifications and client brief.
		1.3	***Vacuum sewerage system attributes*** are evaluated and a ***cost-benefit analysis*** is conducted, comparing a range of pipe materials and system designs.
		1.4	***Statutory and regulatory requirements and relevant Australian standards and codes*** for the design of vacuum sewerage systems are analysed and applied.
		1.5	***Manufacturer requirements*** and trade and technical manuals are interpreted.
		1.6	Additional research, including a ***desktop study***, is conducted to outline design parameters.
		1.7	Factors that contribute to quality, safety and time efficiency are determined.
		1.8	***Performance requirements*** are established, considering safety of system users or building occupants.
2	**Plan and detail system components.**	2.1	***Layout of pipework systems*** and type and location of ***fittings, valves and controls*** are planned.
		2.2	Sewerage loading is calculated using equivalent population (EP) density for a residential development in excess of 25 dwellings and National Construction Code for a high-rise project.
		2.3	***Pipe size calculations*** are performed for a range of applications according to regulations and manufacturer requirements.
		2.4	***Pipe supports*** are designed for a range of applications.
		2.5	***Vacuum pumping station and pump control requirements*** are sized and detailed.

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		2.6	Approved ***materials***, ***jointing methods*** and ***installation requirements*** for vacuum sewerage systems are specified.
		2.7	Approved point of discharge to authority's main is determined.
		2.8	Acoustic performance of the system is included in the plan.
3	**Design and size systems.**	3.1	Vacuum sewerage systems are designed for a range of applications.
		3.2	Vacuum sewerage systems are designed and sized using calculations and ***computer software packages***.
		3.3	***Sustainability principles and concepts*** are applied throughout the design process.
4	**Prepare documentation.**	4.1	Client brief of the desired design is prepared.
		4.2	***Plans*** and ***specifications*** are prepared for a range of vacuum sewerage systems.
		4.3	***Testing*** and ***commissioning schedule*** is prepared.
		4.4	***Operation and maintenance manual*** is produced, including information on how to properly and safely maintain the system.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - communicate with others to ensure safe and effective work practices
  - confirm job specifications and client requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to develop creative and responsive approaches
- literacy skills to:
  - prepare documentation, including:
    - operation and maintenance manual
    - plans, specifications and schedules
  - read and interpret:
    - plans, specifications, drawings and design briefs
    - standards and manufacturer requirements and manuals
    - statutory and regulatory requirements
- numeracy skills to:
  - apply measurements and calculations
  - interpret data
- planning and organising skills to:
  - research, collect, organise and understand information relating to the design of vacuum sewerage systems
  - take initiative and make decisions
- problem-solving skills to analyse requirements, consider options and design an appropriate system
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
  - determine installation details for vacuum sewerage systems
  - prepare specifications for vacuum sewerage systems
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

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Required knowledge

- relevant Australian standards, including Sewerage Code of Australia
- manufacturer specifications, including hazards identified in relation to devices and systems used
- fire safety requirements
- other codes or standard operating procedures
- pipe-sizing procedures
- pump selection and rising main requirements
- ventilation requirements
- odour control
- regulatory authorities' requirements
- nature of materials used and effects of performance under various conditions
- common terminology and definitions used in the design of vacuum sewer systems
- principles of technology in the design of sewer infrastructure systems
- work health and safety (WHS) requirements, including relevant statutory regulations, codes and standards

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to as a minimum, provide evidence of the ability to:

- design, size and document the installation and layout details for a vacuum infrastructure sewer system for a:
- residential development of 50 properties, incorporating:
  - vacuum sewage collection chambers
  - vacuum sewer mains
  - vacuum pump station
  - pump rising main
  - ventilation
  - odour control
- high-rise mixed development building, to a minimum of 29 floors, inclusive of a basement, to include fixtures on each floor level (fixtures are included in the basement), incorporating:
  - vacuum pump station
  - vacuum sanitary drainage system
  - pump rising main
  - ventilation
  - odour control
- apply sustainability principles and concepts throughout to achieve a star rating under the Green Building Council of Australia rating scheme
- evaluate and document design parameters, including client, regulatory and manufacturer requirements and relevant Australian standards and codes for a range of complex sanitary plumbing and drainage systems
- evaluate health risks associated with the sanitary

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plumbing and drainage system
- calculate pipe sizes according to regulations and manufacturer requirements
- design and size vacuum sewerage systems using appropriate calculations and computer software
- select materials and components for compliance, fit for purpose, durability, compatibility and cost-effectiveness
- prepare a testing and commissioning schedule
- produce an operation and maintenance manual
- communicate with others to ensure safe and effective workplace operations.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions, including design brief drawings, specifications, codes, design concepts and construction schedules
- tools and equipment appropriate to applying safe work practices, including computers, software and calculators
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

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Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if

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used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Scope of work:

- must include:
  - interpreting plans and specifications
  - sizing and documenting layout of vacuum sewage systems, including residential, commercial and industrial
- may be for new projects or an existing structure being renovated, extended, restored or maintained.

Design requirements must include:

- acoustic performance
- architectural plans
- building specifications
- fire safety requirements
- flow requirements and sizing of pipework
- odour control
- owner requirements
- pipework identification
- Sewerage Code of Australia
- vacuum pumping station
- ventilation requirements.

Vacuum sewerage system attributes must include:

- availability
- cost
- flexibility
- installation requirements
- low water usage
- risks
- sewerage loading
- site conditions.

Cost-benefit analysis:

- compares the range of suitable materials and system choices available to enable cost-effective choices to be made without compromising integrity of project
- may include:
  - energy costs
  - expected design life

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- labour costs
- material costs
- safety factors
- speed of installation
- suitability of design.

Statutory and regulatory requirements and relevant Australian standards and codes may include:

- Acts, regulations and commonwealth, state or territory, and local government requirements
- Sewerage Code of Australia
- AS/NZS3500 National plumbing and drainage
- AS2200 Design charts for water supply and sewerage
- Environmental Protection Authority (EPA)
- National Construction Code
- other relevant Australian standards or codes.

Manufacturer requirements may include:

- material specifications
- collection and storage systems
- design and installation
- equipment installation
- pump installation
- selection of compatible sanitary fixtures
- technical manuals.

Desktop study may include collection and interpretation of data for design purposes in:

- architectural and building plans
- developer plans
- manufacturer data
- documents, which may include:
  - applications
  - brochures
  - forms
  - policies
  - sewer detail maps
  - other reports as available.

Performance requirements may include:

- discharge requirements
- durability
- emergency storage and/or power backup
- longevity

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- noise level
- self-cleaning ability
- sufficient capacity.

Layout of pipework systems:

- sewer infrastructure systems must include consideration of:
  - cover
  - grade
  - location of vacuum pump station
  - location vacuum sewage collection chambers
  - odour control
  - pipe access
  - ventilation
- high-rise building projects must include consideration of:
  - acoustic performance
  - amenity of the building
  - clipping and pipe support
  - location of pipework (fire rating of enclosure)
  - function of the building
  - impingement on floor heights
  - materials to be used
  - size of penetrations
  - type of building structure
- should not unduly affect building integrity and aesthetic appeal
- should include principles of economy, serviceability, durability and fit for use should be applied.

Fittings, valves and controls include:

- fittings:
  - bends
  - elbows
  - inspection and maintenance access
  - tees
  - unions
- valves:
  - backflow prevention
  - isolating
  - non-return

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- strainers
- vacuum diaphragm valve
- controls:
  - pneumatic control switch assembly
  - vacuum management system.

Pipe size calculations must include:

- determining flow and fixture loadings
- EP density
- calculating gradient
- interpreting design charts and tables
- determining self-cleaning velocities
- manufacturer requirements
- probable simultaneous demand.

Pipe supports may include:

- bedding
- bracket spacing
- concrete support
- corrosion protection
- cover
- hanging brackets
- manufacturer-recommended specific fixings
- material requirements
- provision for expansion
- thrust blocks
- wall and ceiling brackets.

Vacuum pumping station and pump control requirements may include:

- access covers
- automatic controls
- capacity
- corrosion-resistant materials
- detailing
- emergency storage
- emergency power supply
- high and low-level water controls and alarms
- impeller sizing
- inlet and outlet design requirements
- installation and mounting requirements
- macerator requirements
- odour control
- pneumatic control switch assembly

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- pump selection
- pump sizing
- pumpwell sizing
- space requirements
- vacuum pump systems
- valve requirements
- ventilation
- warning system.

Materials:

- appropriate materials specified based on:
  - compatibility
  - cost effectiveness
  - durability
  - fit for purpose
- may include:
  - copper (Cu)
  - polyethylene (PE)
  - polypropylene (PP)
  - polyvinyl chloride (PVC)
  - stainless steel
  - other approved material.

Jointing methods may include:

- brazing
- electrofusion welding
- flanged
- mechanical joints
- rubber ring
- solvent cement welding
- threading.

Installation requirements may include:

- acoustic performance
- bedding
- pipe protection, which may include:
  - cover
  - corrosion
  - impact
- grade
- level of workmanship.
- fire rating

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- manufacturer-recommended specific fixings
- pipe support
- provision for pipe movement
- serviceability and access.

Computer software packages may include:

- manufacturer software
- proprietary design software.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - selecting appropriate material to ensure minimal environmental impact
  - efficient use of material
  - capital outlay/energy usage comparison
  - positive effect on the environment in regard to no potential overflow or leakage
  - water efficient
  - consideration of the Green Building Council of Australia rating scheme
  - local environment consideration overflow disposal/reuse.

Plans:

- may include:
  - axonometrics
  - cross-sections
  - details
  - elevations
  - isometrics
  - schematics
  - site
  - sections
- may be produced using:
  - computer generation
  - drawing equipment.

Specification includes:

- access chambers (manholes)
- bedding
- commissioning

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- concrete support and detailing specialised components
- jointing
- manufacturer requirements
- materials
- odour control
- pump rising main
- safety (WHS)
- selection of compatible sanitary fixtures
- support
- testing
- vacuum pump station
- vacuum sewage collection chambers
- vacuum sewer mains
- ventilation
- workmanship.

Testing may include:

- compressed air test
- flow testing
- hydrostatic test
- inspection checklist
- performance
- vacuum
- quality assurance (QA) audit.

Commissioning schedule must include:

- system certification
- check for foreign material
- checking leaks
- emergency procedures
- system defects
- system functions as per design.

Operation and maintenance manual includes:

- as installed drawings
- results of commissioning test
- certification documentation
- maintenance schedules
- manufacturer brochures and technical information
- operating procedures.

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Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPRF2022A Select and install roof sheeting and wall cladding

Modification History

Prerequisite unit changed
Minor changes throughout the unit
Not equivalent to CPCPRF2012A

Unit Descriptor

This unit of competency specifies the outcomes required to select and install roof sheeting, steel battens and wall cladding for roofs. It includes the selection and installation of non-metallic roof materials associated with metal roofing (excluding roof tiles and slate) and of insulation materials.

Application of the Unit

Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	**Prepare for work.**	1.1	Plans and specifications are obtained from site inspection.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** selecting and installing roof sheeting and wall cladding are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient selection and installation of ***roof sheeting*** and wall cladding.
2	**Identify insulation requirements.**	2.1	Level of insulation from rain and other noise, condensation control and heat transfer reduction is determined.
		2.2	***Installation*** method, insulation supports and insulation materials are identified to meet performance requirements, plans, specifications, regulatory authorities' requirements and relevant ***information***.
		2.3	Quantity and type of ***insulation materials*** required are calculated from design drawings and specifications in compliance with local authorities' requirements.

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3	**Select sheeting, cladding and non-metallic materials.**	3.1	Appropriate roof sheeting and wall cladding are identified to comply with design specifications.
		3.2	Quantity and type of manufactured roof coverings and/or fittings required are calculated from design drawings and specifications in compliance with local authorities' requirements.
		3.3	Manufactured non-metallic roof materials are identified from plans and specifications and verified as compliant with design requirements and regulatory authorities' requirements.
		3.4	Proposed roof and wall coverings, sealant, non-metallic materials, fixing materials, roofing and catchments are selected and checked for compatibility.
		3.5	***Materials***, including insulation, are identified, ordered and collected according to workplace procedures.
		3.6	Materials and equipment are checked for compliance with docket and order form and for acceptable condition, and ***faults are reported***.
4	**Install roof sheeting or wall cladding.**	4.1	Safety mesh and thermal insulation are fixed according to relevant Australian standards, job specification and manufacturer requirements.
		4.2	Sheets are marked and trimmed prior to fixing and cut edges are treated according to manufacturer specifications.
		4.3	Sheets, cladding and non-metallic materials are fixed in compliance with relevant Australian standards and manufacturer specifications.
		4.4	***Sustainability principles and concepts*** are applied throughout the installation.
5	**Clean up.**	5.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		5.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations

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and workplace procedures.

5.3 Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- literacy skills to:
  - complete written workplace documentation
  - document scope of work and work practices
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
  - identify and accurately report to appropriate personnel any faults in tools, equipment or materials
  - select and install non-metallic roof materials associated with metal roofing (excluding roof tiles and slate) and insulation materials
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- capillary action, thermal expansion and fabrication techniques to prevent leaking installations
- corrosion prevention treatment requirements of cut sheets
- electrolysis and problems associated with the use of dissimilar metals

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- job safety analysis (JSA) and safe work method statements(SWMS)
- processes of selecting and installing roof sheeting and wall cladding
- relevant WHS regulations and fall protection codes and requirements
- relevant statutory requirements related to installing roof sheeting and wall cladding, including non-metallic materials
- SI system of measurement
- types of fasteners, fixings and sealants and their application to the installation of roof coverings

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, relevant Australian standards and specifications to selecting and installing roof coverings and wall cladding
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, calculating the requirements and selecting and installing roof sheeting, wall cladding and insulation for two roof structures, each roof structure being a minimum of 4 square metres area, one of which incorporates 2 square metres of non-metallic roof sheeting
- both installations may include insulation, flashings and cappings, using the pierced and concealed fastening methods, ensuring:
  - application of sustainability principles and concepts throughout the installation
  - correct identification of requirements and details of proposed installation
  - correct fit of the completed installation
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, relevant Australian standards and organisational quality procedures and processes
  - communicating and working effectively and

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safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and

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environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances

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- service lines
- surrounding structures and facilities
- trip hazards
- use of tools and equipment
- work site visitors and the public
- working at heights
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Quality assurance requirements may include:

- environment policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- elevated work platforms
- fall protection equipment
- hand and power tools
- ladders
- lifting and load shifting equipment, including:
  - chain blocks
  - cranes
  - forklifts
  - hand trolleys
  - hoists and jacks
  - restricted height scaffolds
  - rollers

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- measuring equipment.

Roof sheeting may include:

- metal and non-metallic (clear and coloured) sheets
- other approved materials.

Installation may include:

- fitting safety mesh and rainwater fittings.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to selecting and installing roof sheeting and wall cladding
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Insulation materials may include:

- batts
- interlocking sections
- loose fill
- rolls.

Materials for selecting and installing roof sheeting and wall cladding may include:

- approved roof battens
- cappings
- fixings and fasteners
- flashings
- insulation, including:
  - fibreglass

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- laminate
- polyethylene
- reflective foil
- straw
- wool
- insulation supports, including:
  - plaster board
  - timber board
  - wire mesh
- metal roof covers of concealed or pierce fixed types
- moulds
- plastic building sheets for walls and roofs
- rain water goods, including:
  - aluminium
  - copper
  - fibreglass
  - polycarbonate
  - stainless steel
  - steel
  - zincalume
- rivets and sealants
- self drilling and tapping screws
- trims
- other approved materials.

Fault reporting:

- may be written or verbal
- is to be according to company's workplace procedures.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient energy use
  - efficient use and recycling of material
  - disposing of waste material to ensure minimal environmental impact
  - selecting appropriate components to ensure minimal environmental impact.

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Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPRF2023A Collect and store roof water

Modification History

Prerequisite unit changed
Minor changes throughout the unit
Not equivalent to CPCPRF2013A

Unit Descriptor

This unit of competency specifies the outcomes required to determine storage requirements and to plan, prepare and install storage tanks and related piping for the collection and storage of roof water.
The unit requires the installation of water storage tanks of at least 1000 litres capacity.

Application of the Unit

Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	**Identify water storage system requirements.**	1.1	Plans, specifications and any special instructions are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with ***collecting and storing roof water*** are adhered to throughout the work.
		1.3	***Quality assurance requirements*** for company operations are identified and adhered to.
		1.4	Site's annual rainfall is determined from meteorological or other relevant data.
		1.5	Roof catchment area is determined from plans or site inspection.
		1.6	Water consumption requirements for the installation are determined.
		1.7	Total water storage requirements for the installation are determined.
		1.8	Criteria for ***storage tanks***, gutters, downpipes and other system components are determined according to relevant Australian standard and other ***information***.
2	**Plan and prepare for installation.**	2.1	Required materials are identified, ordered and collected according to workplace procedures.
		2.2	Work is planned in conjunction with others involved in or affected by the work.
		2.3	***Materials*** are checked for compliance with docket and

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			order form and for acceptable condition, and ***faults are reported***.
		2.4	Work area and materials are prepared to support efficient installation.
		2.5	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
3	**Install storage system.**	3.1	Set out complies with design drawings or instructions.
		3.2	Preparatory work, including ***installation*** of tank stand or standing, is carried out to specification without damage to surrounding structures or existing services.
		3.3	System is installed according to job specification and ***statutory and regulatory authorities'*** requirements.
4	**Clean up.**	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	***Tools and equipment*** are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to:
  - apply calculations and measurements
  - interpret data
- planning and organising skills to:
  - plan and set out work
  - plan work with others
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- job safety analysis (JSA) and safe work method statements (SWMS)
- procedures for commissioning water storage tanks for use
- processes for accessing information and for calculating material requirements

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- properties of water, including:
  - effect of gravity and atmospheric pressure
  - procedures for maintaining water quality
  - sources of contamination and impurities
- regulations and requirements pertaining to collecting and storing drinking water and non drinking water
- relevant statutory requirements related to collecting and storing roof water
- SI system of measurements
- water storage installation processes
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, relevant Australian standards and specifications for determining requirements, planning and installing storage tanks for drinking water
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, completing the following in respect of roof water collection and storage systems:
  - calculate the water catchment area of a roof, the gutter and downpipe materials required and the amount of water storage required for a given job
  - determine system requirements from plans and specifications according to local authorities' requirements
  - planning the layout and installation of a storage tank of not less than 1000 litres capacity, incorporating an inlet connection and a first flush device from a roof catchment area, and an overflow to be connected to an approved stormwater point of discharge, ensuring:
    - application of sustainability principles and concepts
    - correct identification of location, design and details of proposed storage
    - correct selection and use of appropriate processes, tools and equipment

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- completing all work to specification
- compliance with regulations, relevant Australian standards and organisational quality procedures and processes
- communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning

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knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and

- handling of materials
- hazard control
- personal protective clothing and equipment

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regulations and may include:	prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including recognising and preventing hazards associated with:
	  • electricity
	  • hazardous materials and substances
	  • service lines
	  • surrounding structures and facilities
	  • trip hazards
	  • use of tools and equipment
	  • work site visitors and the public
	  • working at heights
	  • working in proximity to others
	• use of firefighting equipment
	• use of first aid equipment
	• workplace environment and safety.

Environmental requirements cover water quality management and may include:	• clean-up protection • stormwater protection • waste management.
Roof water collected and stored may be for:	• drinking or non-drinking purposes.
Quality assurance requirements may include:	• environment policy • Environment Protection Authority (EPA) • internal company quality assurance policy and risk management strategy • International Standards Organisation • site safety plan • workplace operations and procedures.
Storage tanks may be of:	• any authorised material.
Information may include:	• charts and hand drawings • instructions issued by authorised organisational or external personnel • manufacturer specifications and instructions • material safety data sheets (MSDS) • memos

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- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to determining, preparing and installing collection and storage systems for roof water
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Materials for installing storage tanks are to include:

- water storage tanks, and components of authorised materials that comply with local authorities' requirements, such as:
  - coated steel materials
  - metal guttering
  - PVC
  - sealants
  - tank stand.

Fault reporting:

- may be written or verbal
- is to be according to company's workplace procedures.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient energy use
  - rainwater harvesting
  - efficient use and recycling of material
  - disposing of waste material to ensure minimal environmental impact
  - selecting appropriate components to ensure minimal environmental impact.

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Installation covers:

- both gravity and pump retrieval systems.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- hand and power tools
- ladders
- levelling equipment
- lifting and load shifting equipment, including:
  - chain blocks
  - excavation equipment
  - forklifts
  - hand trolleys
  - hoists and jacks
  - rollers
- measuring equipment.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPRF2024A Fabricate roof coverings for curved structures

Modification History

Prerequisite unit changed
Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPRF2014A

Unit Descriptor

This unit of competency specifies the outcomes required to design and fabricate curved industrial roof coverings.

Application of the Unit

Site location for work application will normally be industrial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	**Prepare for work.**	1.1	Plans and specifications are obtained for component to be designed and fabricated.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with the design and fabrication of curved roof coverings are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability and ***faults are reported***.
		1.6	Work area is prepared to support efficient design and fabrication of ***curved roof coverings***.
2	**Design covering.**	2.1	Roofing material is selected that is suitable for the fabrication process, job requirements and relevant ***information***.
		2.2	Curvature of roof covering is ascertained and used to determine the starting and finishing points of curves.
		2.3	Design and freehand sketch of roof covering are created to form the basis of ***fabrication patterns***.
		2.4	Fabrication patterns are drawn based on design and

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			freehand sketch of roof covering.
		2.5	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
3	**Fabricate covering.**	3.1	***Material*** list is determined from patterns and calculations.
		3.2	Method of fabrication, tools and machinery for fabrication are determined to suit job requirements.
		3.3	Roof covering is marked out according to drawings, patterns, or calculations and prefabricated.
		3.4	Components are marked and packaged for delivery to point of installation.
4	**Clean up.**	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice, and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- literacy skills to:
  - complete written workplace documentation
  - develop materials list
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- capillary action, thermal expansion and fabrication techniques to prevent leaking installations
- characteristics of various metals and finishes
- design concepts and performance measures for curved roof coverings

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- electrolysis and problems associated with the use of dissimilar metals
- job safety analysis (JSA) and safe work method statements (SWMS)
- processes of designing and fabricating curved roof coverings
- relevant statutory and regulatory authority requirements related to metal roofs
- SI system of measurement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications for the design and fabrication of curved roof coverings
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications of a bull nosed verandah roof incorporating one internal and one external angle, designing and fabricating the curved roof coverings, ensuring:
  - application of sustainability principles and concepts
  - correct identification of design criteria and fabrication requirements
  - fabrication conforms with the design requirements
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

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Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning

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experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of tools and equipment
  - work site visitors and the public
  - working at heights

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- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Quality assurance requirements may include:

- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- drafting equipment
- hand and power tools
- lifting and load shifting equipment, including:
  - chain blocks
  - forklifts
  - hand trolleys
  - hoists and jacks
  - rollers
- machinery for shaping the roof material
- measuring equipment.

Fault reporting:

- may be written or verbal
- is to be according to company workplace procedures.

Curved roof covering may be:

- barrel shaped
- concave
- convex

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- hyperbolic
- paraboloid.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to the design, and fabrication of coverings for curved roofs
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Fabrication patterns may be:

- actual size or scaled.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient energy use
  - efficient use and recycling of material
  - disposing of waste material to ensure minimal environmental impact
  - selecting appropriate components to ensure minimal environmental impact.

Materials may include:

- drawing materials
- manufacturer catalogues and specifications
- metal roof sheeting of concealed or fixed type and accessories.

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Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPRF3021A Receive roofing materials

Modification History

Prerequisite unit changed
Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPRF3011A

Unit Descriptor

This unit of competency specifies the outcomes required to coordinate the delivery, receipt and handling of roofing materials on a site.

Application of the Unit

Site location for work application may be either domestic or commercial and may be an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	**Prepare for work.**	1.1	Plans and specifications are obtained and confirmed by site visit.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** materials handling are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	***Tools and equipment***, including personal protective equipment and barricades and signs, are selected and checked for serviceability.
		1.5	Work area is prepared to support efficient receipt of roofing materials.
2	**Plan delivery.**	2.1	Plans, specifications, ***material*** quantity details and other relevant ***information*** are interpreted to determine amount and type of material to be delivered to site.
		2.2	Site is visited to determine capacity, identify risks and hazards, and identify load-handling methods and techniques.
		2.3	Spot load limits on roof frame structure are obtained from structural engineer.
		2.4	Loads are sequenced according to job requirements and work site capacity.
		2.5	Orders are placed specifying items, quantities and sequence of delivery of each load.

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		2.6	Deliveries are planned and sequenced in conjunction with others involved in or affected by their arrival.
3	**Receive delivery of materials.**	3.1	Employees are informed of delivery process.
		3.2	Access to site for crane and other support vehicles and equipment is cleared and provided.
		3.3	Delivery sites and spot load sites and material securing equipment are prepared.
		3.4	Safety barricades and signs are positioned.
		3.5	Loads are moved from delivery vehicle to spot load positions or other determined site location.
		3.6	Loads are covered and secured to prevent damage according to standards and manufacturer requirements, and ***faults are reported***.
		3.7	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
4	**Clean up.**	4.1	Safety barricades and signs are removed.
		4.2	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulation, codes of practice and job specification.
		4.3	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.4	Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - inform employees of delivery process
  - plan and sequence deliveries with others
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply calculations
- planning and organising skills to:
  - coordinate receipt of deliveries of roofing materials to a work site
  - plan and set out work
  - sequence the delivery of materials
- relocating materials and securing them within the site
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- application of relevant regulations and workplace procedures

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- deployment of relevant human and physical resources and facilities
- identification and correct use of equipment, processes and procedures
- job safety analysis (JSA) and safe work method statements (SWMS)
- methods of working and correct selection and use of equipment relevant to work activity
- relevant WHS regulations and fall protection codes and requirements
- relevant statutory requirements related to transportation and storage of roofing materials
- SI system of measurement
- techniques and procedures for delivery of roof plumbing materials
- workplace planning and estimation processes for delivery of roof plumbing materials

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to receiving roofing materials
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications of a roofing project, assessing roofing material requirements, sequencing their delivery to correspond with a planned construction project, receiving the materials (including the location of spot points) and securing arrangements, ensuring:
  - application of sustainability principles and concepts
  - correct identification of requirements and details of their delivery
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

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Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning

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experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances
  - lifting and placement of loads
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of tools and equipment

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- work site visitors and the public
- working at heights
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements may include:

- clean-up protection
- waste management.

Quality assurance requirements may include:

- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:

- barricades and signage
- fall protection equipment
- ladders
- lifting and load shifting equipment, including:
  - chain blocks
  - elevated work platforms
  - forklifts
  - hand trolleys
  - hoists and jacks
  - restricted height scaffolds
  - rollers.

Materials that may be received include:

- blanket and batt types
- industrial roof components
- laminate
- metal rainwater products
- metal roof covers of concealed or pierce fixed types
- metal self drilling and tapping screws
- plastic building sheets for walls and roofs
- prefabricated roofing components
- rainwater goods
- rivets and sealants (silicon and solder)

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- thermal insulation of reflective foil.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to receiving roofing materials
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Fault reporting:

- may be written or verbal
- is to be according to company's workplace procedures.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient use and recycling of material
  - disposing of waste material to ensure minimal environmental impact
  - selecting appropriate components to ensure minimal environmental impact.

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Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPRF3022A Fabricate and install roof drainage components

Modification History

Prerequisite unit changed
Minor changes throughout the unit
Not equivalent to CPCPRF3012A

Unit Descriptor

This unit of competency specifies the outcomes required to fabricate and install roof drainage components and rainwater goods for commercial and residential roof systems.

Application of the Unit

Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	**Prepare for work.**	1.1	Plans and specifications are obtained and confirmed by site inspection.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with fabricating and installing roof drainage components are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support the fabrication and installation of roof drainage components.
2	**Identify installation requirements.**	2.1	Rainwater management system is identified as suitable for preventing rainwater penetration into building structure.
		2.2	***Roof drainage components*** required for installation are identified from drawings and specifications.
		2.3	***Fabrication patterns*** are drawn based on design and freehand sketch of roof drainage.
		2.4	Quantity, type and sizing of drainage components, rainwater materials and accessories required are calculated from drawings and specifications in compliance with relevant Australian standards, local authorities' requirements and relevant ***information***.
		2.5	Box gutter support system is fabricated according to relevant Australian standard.
		2.6	***Materials*** are identified from drawings, specifications, patterns and/or calculations and ordered and collected according to workplace procedures.
		2.7	Materials and equipment are checked for compliance

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			with docket and order form and for acceptable condition, and ***faults are reported***.
3	**Fabricate roof drainage components.**	3.1	Method of fabrication, tools and machinery requirements are determined to suit job requirements.
		3.2	Materials are marked out from drawings to fabricate roof drainage components.
		3.3	Roof drainage components are fabricated in compliance with relevant Australian standards, drawings, specifications and site measurements.
		3.4	Components are marked, packaged and prepared for delivery and installation according to workplace procedures.
4	**Set out and install roof drainage components.**	4.1	Components are checked for compliance with docket and order form and for acceptable condition, and arranged in order of installation.
		4.2	Roof drainage components are set out to comply with job specifications and site measurements.
		4.3	Structural supports are installed in compliance with job specifications.
		4.4	Roof drainage components are jointed in compliance with job specifications and relevant Australian standards.
		4.5	Roof drainage system is installed according to relevant Australian standards and job specifications.
		4.6	***Sustainability principles and concepts*** are applied throughout the installation.
		4.7	System is performance tested for satisfactory installation and remedied.
5	**Clean up.**	5.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		5.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations

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and workplace procedures.

5.3 Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to select, fabricate, joint and install gutter and downpipe systems to effectively drain a roof to an authorised discharge point
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- capacity of fabrication machinery involved in the production of roof drainage components
- capillary action, thermal expansion and fabrication techniques to prevent leaking installations
- characteristics of various metals and finishes
- corrosion prevention treatment requirements of cut sheets

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- design concepts and performance measures for roof drainage components
- electrolysis and problems associated with the use of dissimilar metals
- job safety analysis (JSA) and safe work method statements (SWMS)
- joining of materials
- processes of fabricating, jointing and fixing roof drainage components
- relevant WHS regulations and fall protection codes and requirements
- relevant statutory requirements related to fabricating and installing roof drainage components
- SI system of measurement
- types of fasteners, fixings and sealants and their application to the fabrication and installation of roof coverings

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, relevant Australian standards and specifications to the fabrication and installation of roof drainage components
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications of a roof-management system for a roofed area of at least 4 square metres, determining the requirements, selecting, fabricating and installing:
  - valley gutter
  - box gutter, to include a sump or rainhead and overflow
  - eaves gutter and downpipe system, complete with gutter supports, expansion joints and caps
- ensuring:
  - application of sustainability principles and concepts throughout the installation
  - correct identification of requirements and details of proposed installation
  - correct fit of the completed installation
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, relevant Australian standards and organisational quality procedures and processes

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- communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and

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environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances

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- service lines
- surrounding structures and facilities
- trip hazards
- use of tools and equipment
- work site visitors and the public
- working at heights
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Quality assurance requirements may include:

- environment policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- drawing equipment
- fall protection equipment
- hand and power tools
- ladders
- lifting and load shifting equipment, including:
  - chain blocks
  - cranes
  - elevated work platforms
  - forklifts
  - hand trolleys
  - hoists and jacks
  - restricted height scaffolds

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- rollers
- measuring equipment.

Roof drainage components may include:

- box gutters
- downpipes
- eaves gutters
- gutter support system
- parapet gutters
- rainwater heads
- siphonic drainage downpipe systems and materials
- standing overflows
- sumps
- valley gutters.

Fabrication patterns may be:

- actual size or scaled.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to fabricating and installing roof drainage components
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Materials for fabricating and installing roof drainage components

- fibreglass
- laminate
- metal gutter and structural supports

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may include:

- metal rainwater goods
- metal roof covers of concealed or pierce fixed types
- metal self drilling and tapping screws
- plastic building sheets for walls and roofs
- polyethylene
- PVC sheet goods
- rivets and sealants
- thermal insulation of reflective foil
- roof tiles.

Fault reporting:

- may be written or verbal
- is to be according to company's workplace procedures.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - rainwater harvesting
  - efficient energy use
  - efficient use and recycling of material
  - correct handling of hazardous materials
  - disposing of waste material to ensure minimal environmental impact
  - selecting appropriate components to ensure minimal environmental impact.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPRF3023A Fabricate and install external flashings

Modification History

Prerequisite unit changed
Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPRF3013A

Unit Descriptor

This unit of competency specifies the outcomes required to fabricate and install external flashings for roof and ceiling installations.

Application of the Unit

Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	**Prepare for work.**	1.1	Plans and specifications are obtained and confirmed by site inspection.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with fabricating and installing external flashings are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient fabrication and installation of ***external flashings***.
2	**Identify installation requirements.**	2.1	External flashings to be installed are identified and working drawings and patterns are developed from job drawings, plans, specifications, site measurements and relevant ***information***.
		2.2	***Materials***, coatings, fixings, sealants and fasteners are checked for compliance with plans, specifications and standards and are compatible with adjacent materials and catchment.
		2.3	Materials are identified, ordered and collected according to workplace procedures.

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		2.4	Materials and equipment are checked for compliance with docket and order form and for acceptable condition, and ***faults are reported***.
3	**Fabricate and install external flashings.**	3.1	External flashings are fabricated in compliance with standards, plans, specifications and site measurements.
		3.2	Support framework is set out where required and fixed to comply with plans, specifications and manufacturer recommendations.
		3.3	Thermal insulation, where required, is set and fixed according to plans, specifications and cladding manufacturer's recommendations.
		3.4	***Sustainability principles and concepts*** are applied throughout the installation.
4	**Clean up.**	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- capillary action, thermal expansion and fabrication techniques to prevent leaking installations
- corrosion prevention treatment requirements of cut sheets
- design concepts and performance measures for various external flashings
- electrolysis and problems associated with the use of dissimilar metals

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- job safety analysis (JSA) and safe work method statements (SWMS)
- processes of fabricating and installing external flashings
- relevant WHS regulations and fall protection codes and requirements
- relevant statutory requirements related to installing external flashings
- SI system of measurement
- types of fasteners, fixings and sealants and their application to the fabrication and installation of external flashings

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to the fabrication and installation of external flashings
- applying safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- given the plans and specifications:
  - fabricate and install a minimum of 2 square metres of metal ceiling and associated soffits
  - fabricate and install metal flashings to include an apron, parapet, apron wall, hanging and step, each up to a length of 1.5 metres
  - install a metal fascia up to 2 metres in length, including one external angle and one internal angle
  - all fabrication and installation, ensuring:
    - application of sustainability principles and concepts throughout the installation
    - correct identification of requirements and details of the proposed installations
    - correct fit of the completed installation
    - correct selection and use of appropriate processes, tools and equipment
    - completing all work to specification
    - compliance with regulations, standards and organisational quality procedures and processes
    - communicating and working effectively and safely with others.

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Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

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Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances
  - service lines

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- surrounding structures and facilities
  - trip hazards
  - use of tools and equipment
  - work site visitors and the public
  - working at heights
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Quality assurance requirements may include:

- Australian standards
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- National Construction Code
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- hand and power tools
- ladders
- levelling equipment,
- lifting and load shifting equipment, including:
  - chain blocks
  - cranes
  - elevated work platforms
  - forklifts
  - hand trolleys
  - hoists and jacks
  - restricted height scaffolds
  - rollers

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- measuring equipment
- perimeter guard rails.

External flashings may include:

- metal ceilings
- associated soffits and fascias.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to fabricating and installing external flashings
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Materials for fabricating and installing external flashings may include:

- cappings
- flashings
- insulation materials, such as foil laminate
- lead
- metal rainwater goods
- metal self drilling and tapping screws
- moulds
- rivets and sealants
- trims
- other approved materials.

Fault reporting:

- may be written or verbal
- is to be according to company workplace

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procedures.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient use of material
  - efficient energy use
  - selecting appropriate components to ensure minimal environmental impact.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPRF3024A Install roof components

Modification History

Prerequisite unit updated
Minor changes throughout unit, including addition of photovoltaic (solar) panels to range statement
Not equivalent to CPCPRF3014A

Unit Descriptor

This unit of competency specifies the outcomes required to select and install industrial type roofing components in roofs.

Application of the Unit

Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	**Prepare for work.**	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with selecting and installing industrial roof components are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient selection and installation of ***industrial roof components***.
2	**Identify installation requirements.**	2.1	Industrial roof components are identified from plans and specifications and are compatible with adjacent materials and other relevant ***information***.
		2.2	Proposed sealant, fixing materials, and roofing and flashing materials are selected and checked for compliance with plans, specifications and relevant Australian standards.
		2.3	***Materials*** are identified, ordered and collected according to workplace procedures.
		2.4	Materials and equipment are checked for compliance

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			with docket and order form and for acceptable condition, and ***faults are reported***.
		2.5	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
		2.6	Location of installation and opening size are identified from plans and manufacturer specifications.
		2.7	Location is checked for obstructions that may affect the installation.
3	**Install roof components.**	3.1	Where required, the industrial component is erected to comply with manufacturer recommendations.
		3.2	Industrial roof component is set out to comply with plans, specifications and site measurements.
		3.3	Structural supports are installed to comply with plans and specifications.
		3.4	Openings are prepared to comply with plans, specifications and relevant Australian standards.
		3.5	Mullions, frames, baffles, sheeting and louvre blades are located and fixed to comply with manufacturer recommendations.
		3.6	Component is installed to comply with plans, specifications and manufacturer requirements.
		3.7	Flashing and waterproofing, including proprietary or purpose-made flashing, are installed to comply with relevant Australian standards, plans, specifications, manufacturer recommendations and regulatory authorities' requirements.
		3.8	Installation is performance tested and remedied as required.
4	**Clean up.**	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.

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4.3 Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- literacy skills to:
  - complete written workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- capillary action, thermal expansion and fabrication techniques to prevent leaking installations
- corrosion prevention treatment requirements of cut sheets
- electrolysis and problems associated with the use of dissimilar metals
- job safety analysis (JSA) and safe work method statements (SWMS)

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- processes of erecting and installing industrial roof components
- relevant WHS regulations and fall protection codes and requirements
- relevant statutory requirements related to installing roof components
- SI system of measurement
- types of fasteners, fixings and sealants and their application to the installation of roof components

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, relevant Australian standards and specifications to determine requirements, plan and install industrial components in roofs
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications of an industrial roof, determine the material requirements, selecting and installing two of the following components in a roof (one on a ridge line and another in roof sheeting, which may include insulation):
  - thermal vent or a skylight
  - non-mechanised ventilator unit
  - manual box-type louvre unit
  - continuous roof ventilator (ridge or slope mounted), ensuring:
    - application of sustainability principles and concepts
    - correct identification of requirements and details of proposed installations
    - completed installation must fit
    - correct selection and use of appropriate processes, tools and equipment
    - completing all work to specification
    - compliance with regulations, relevant Australian standards and organisational quality procedures and processes

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- communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and

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environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances

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- photovoltaic (solar) panels
- service lines
- surrounding structures and facilities
- trip hazards
- use of tools and equipment
- work site visitors and the public
- working at heights
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Quality assurance requirements may include:

- environment policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- cranes
- fall protection equipment
- hand and power tools
- ladders
- levelling equipment
- lifting and load shifting equipment, including:
  - chain blocks
  - elevated work platforms
  - forklifts
  - hand trolleys
  - hoists and jacks

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- restricted height scaffolds
- rollers
- measuring equipment
- perimeter guard rails.

Industrial roof components may be:

- continuous frame sheet type ridge or slope mounted ventilators
- continuous louvre blades, including single, double or triple pass blades
- dome lights and thermal vents
- manual and automated box type louvre units
- non-mechanical roof ventilator units
- ridge vents.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to selecting and installing industrial components in roofs
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Materials for installing industrial components in roofs are to include:

- cappings
- fixings and fasteners
- flashings
- insulation, including:
  - batt types

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- blanket
- foil laminate
- metal rainwater goods
- moulds
- pop rivets and sealants
- roofing materials, including:
  - aluminium
  - colour coated steel
  - copper
  - fibreglass
  - polycarbonate
  - stainless steel
  - steel
  - zincalume
- self drilling and tapping screws
- trims.

Fault reporting:

- may be written or verbal
- is to be according to company's workplace procedures.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient energy use
  - efficient use and recycling of material
  - correct handling of hazardous materials
  - disposing of waste material to ensure minimal environmental impact
  - selecting appropriate components to ensure minimal environmental impact.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

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Custom Content Section

Not applicable.

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CPCPRF3025A Install roof coverings to curved roof structures

Modification History

Prerequisite unit changed
Minor changes throughout the unit
Not equivalent to CPCPRF3015A

Unit Descriptor

This unit of competency specifies the outcomes required to set out and install roofing to hyperbolic, paraboloid, barrel vault roof, curved roof and bull-nosed roof structures.

Application of the Unit

Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	**Prepare for work.**	1.1	Plans and specifications are obtained and confirmed by site inspection.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** installing curved roof structures are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient installation of roof coverings to ***curved roof structures***.
2	**Identify installation requirements.**	2.1	Quantity and type of manufactured roof covering, and fittings and equipment required, are calculated from design drawings and specifications in compliance with relevant Australian standards, local authorities' requirements and relevant ***information***.
		2.2	Proposed sealant, fixing materials, roofing and flashing materials are selected and checked for compatibility.
		2.3	***Materials*** and equipment are identified, ordered and collected according to workplace procedures.
		2.4	Materials and equipment are checked for compliance with docket and order form and for acceptable condition, and ***faults are reported***.
		2.5	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.

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3	**Install roof coverings.**	3.1	Safety mesh and thermal insulation are fixed according to relevant Australian standards, job specification and manufacturer requirements.
		3.2	Sheets are marked and trimmed prior to fixing and cut edges are treated according to manufacturer specifications.
		3.3	Roof covering is installed according to manufacturer specifications.
		3.4	Roof covering is performance tested and remedied.
4	**Clean up.**	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- capillary action, thermal expansion and fabrication techniques to prevent leaking installations
- corrosion prevention treatment requirements of cut sheets
- electrolysis and problems associated with the use of dissimilar metals
- job safety analysis (JSA) and safe work method statements (SWMS)

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- processes of fixing covering to curved roof structures
- relevant WHS regulations and fall protection codes and requirements
- relevant statutory requirements related to installing roof coverings to curved roof structures
- SI system of measurement
- types of fasteners, fixings and sealants and their application to the installation of roof coverings

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, relevant Australian standards and specifications to determine requirements, and plan the layout and installation of roof coverings to curved roof structures
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, calculating the requirements and installing the roof covering to a bull-nose or curved roof structure, incorporating one internal and one external corner, ensuring:
  - application of sustainability principles and concepts
  - correct identification of requirements and details of proposed installation
  - covering fits the structure
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, relevant Australian standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources

This competency is to be assessed using standard and

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for assessment

authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and

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the practical requirements of the workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of tools and equipment

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- work site visitors and the public
- working at heights
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Quality assurance requirements may include:

- environment policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- cranes
- fall protection equipment
- hand and power tools
- ladders
- levelling equipment
- lifting and load shifting equipment, including:
  - chain blocks
  - elevated work platforms
  - forklifts
  - hand trolleys
  - hoists
  - restricted height scaffolds
  - rollers
- measuring equipment.

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Curved roof structure may be:

- barrel shaped
- concave
- convex
- hyperbolic
- paraboloid.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to installing roof coverings to curved roof structures
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Materials for installing roof coverings to curved roofs may include:

- blanket and batt types
- curved metal roof covers of concealed or pierce fixed types
- metal rain water goods
- metal self drilling and tapping screws
- plastic building sheets for walls and roofs
- rivets and sealants
- thermal insulation of reflective foil laminate
- other approved materials.

Fault reporting:

- may be written or verbal
- is to be according to organisational workplace procedures.

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Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient energy use
  - efficient use and recycling of material
  - correct handling of hazardous materials
  - thermal heat reflection and retention
  - disposing of waste material to ensure minimal environmental impact
  - selecting appropriate components to ensure minimal environmental impact.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPRF3026A Install composite roof systems

Modification History

Prerequisite unit changed
Minor changes throughout the unit
Not equivalent to CPCPRF3016A

Unit Descriptor

This unit of competency specifies the outcomes required to install roof sheets for composite roof systems.

Application of the Unit

Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	**Prepare for work.**	1.1	Plans and specifications are obtained and confirmed by site inspection.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with installing composite roof systems are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient ***installation*** of the ***composite roof*** system.
2	**Select composite roof system.**	2.1	Composite roof system is identified for installation, including shape and type of roofing and materials required.
		2.2	Quantity and type of materials and/or fittings required are calculated from design drawings and specifications in compliance with local authorities' requirements and relevant ***information***.
		2.3	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.

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3	**Manufacture roofing materials.**	3.1	***Materials*** are marked out from drawings and/or patterns to fabricate roof coverings and components.
		3.2	Roof components are fabricated according to plans and specifications.
4	**Prepare for installation.**	4.1	Quantity and type of manufactured roof covering and fittings required are calculated from design drawings and specifications in compliance with relevant Australian standards and regulatory requirements.
		4.2	Proposed sealant, fixing materials, and roofing and flashing materials are selected and checked for compatibility.
		4.3	Materials and equipment are identified, ordered and collected according to workplace procedures.
		4.4	Materials and equipment are checked for compliance with docket and order form and for acceptable condition, and ***faults are reported***.
5	**Install roof covering and components.**	5.1	Safety mesh and thermal insulation are fixed according to relevant Australian standards, job plans and specifications, and manufacturer requirements.
		5.2	Required rainwater goods are installed according to relevant Australian standards, plans and specifications.
		5.3	Sheets are marked and trimmed prior to fixing and cut edges are treated according to manufacturer specifications.
		5.4	Sheets are fixed in compliance with relevant Australian standards and manufacturer specifications.
6	**Clean up.**	6.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		6.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.

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6.3 Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- capillary action, thermal expansion and fabrication techniques to prevent leaking installations
- corrosion prevention treatment requirements of cut sheets
- electrolysis and problems associated with the use of dissimilar metals
- job safety analysis (JSA) and safe work method statements (SWMS)

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- processes of manufacturing and installing composite roof systems
- relevant WHS regulations and fall protection codes and requirements
- relevant statutory requirements related to installing composite roof systems
- SI system of measurement
- types of fasteners, fixings and sealants and their application to the fabrication and installation of roof coverings

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, relevant Australian standards and specifications to install composite roof systems
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, calculating the requirements and selecting, fabricating and installing a composite roof system (i.e. gable, Dutch gable, skillion or hip), including insulation and rainwater goods, ensuring:
  - application of sustainability principles and concepts
  - correct identification of requirements and details of proposed installation
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, relevant Australian standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

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Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning

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experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of tools and equipment
  - work site visitors and the public

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- working at heights
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements may include:

- clean-up protection
- stormwater protection
- waste management.

Quality assurance requirements may include:

- environment policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- fall protection equipment
- hand and power tools
- ladders
- levelling equipment
- lifting and load shifting equipment, including:
  - chain blocks
  - cranes
  - elevated work platforms
  - forklifts
  - hand trolleys
  - hoists and jacks
  - restricted height scaffolds
  - rollers
- measuring equipment.

Installation may include the fitting

- insulation
- rainwater fittings

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of:	• safety mesh.
Composite roofs include a combination of:	• Dutch gable • gables • hip • skillion.

Information may include:	• charts and hand drawings
	• instructions issued by authorised organisational or external personnel
	• manufacturer specifications and instructions
	• material safety data sheets (MSDS)
	• memos
	• organisation work specifications and requirements
	• plans and sketches
	• regulatory and legislative requirements, particularly those pertaining to:
	  • building codes
	  • WHS and environmental requirements
	  • plumbing regulations
	• relevant Australian standards
	• safe work procedures relating to installing composite roofs
	• signage
	• verbal, written and graphical instructions
	• work bulletins
	• work schedules, plans and specifications.

Sustainability principles and concepts:	• cover the current and future social, economic and environmental use of resources
	• may include:
	  • efficient energy use
	  • rainwater harvesting
	  • efficient use and recycling of material
	  • correct handling of hazardous materials
	  • thermal heat reflection and retention
	  • disposing of waste material to ensure minimal environmental impact
	  • selecting appropriate components to ensure minimal environmental impact.

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Materials for installing roof composite roofs may include:

- metal roof covers of concealed or pierce fixed types
- metal self drilling and tapping screws
- plastic building sheets for walls and roofs
- rain water goods
- rivets and sealants
- thermal insulation of reflective foil laminate, fibreglass, polyethylene, straw or wool
- other approved materials.

Fault reporting:

- may be written or verbal
- is to be according to company's workplace procedures.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPRF4011B Design and size roof drainage systems

Modification History

Minor changes throughout the unit
Equivalent to CPCPRF4011A

Unit Descriptor

This unit of competency specifies the outcomes required to design, size and document the layout of components of roof drainage systems.

Application of the Unit

Site location for work application will be residential and commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	**Prepare for planning.**	1.1	Nature and scope of planning task are identified and confirmed.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with planning, sizing and documenting the layout of roof drainage systems are adhered to throughout the work.
		1.3	Work is organised and sequenced in conjunction with others involved in or affected by the work.
		1.4	***Tools and equipment*** required for planning, sizing and documenting the layout of roof drainage systems, including personal protective equipment, are selected and checked for serviceability.
		1.5	Work area in which planning process is to be conducted is prepared.
2	**Identify system requirements.**	2.1	***Information*** and specifications for the required work are obtained and confirmed, if necessary by site inspection.
		2.2	Regulations and Australian standards relevant to the work are consulted and applied to all aspects of the work, including ***statutory and regulatory authorities'*** requirements.
		2.3	Roof catchment areas and design flows are determined from rainfall data and relevant Australian standards.
		2.4	Quantity and size of gutters, sumps, rain heads and downpipes are determined according to relevant Australian standards, plans and specifications.
3	**Plan system layout.**	3.1	Layout of roof drainage system is planned according to development plans, specifications, relevant Australian standards and workplace procedures.
		3.2	Required ***materials*** and ***components of roof drainage system*** are specified and optimised according to relevant Australian standards from the proposed design.
		3.3	Plans are recorded according to regulatory authorities'

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			and workplace requirements.
		3.4	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
4	**Restore work area.**	4.1	Work area is restored according to workplace procedures.
		4.2	Tools and equipment used in the process are refurbished and left according to workplace procedures.
		4.3	Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - identify requirements
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - regulations, relevant Australian standards, plans, specifications and drawings
  - record plans
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- accessing relevant information sources for the work activity and the processes for the calculation of catchment areas and design flows
- capacity of fabrication machinery involved in the production of roof draining components
- Australian standards applicable to roof drainage
- capillary action, thermal expansion and fabrication techniques to prevent leaking

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- characteristics of various metals and finishes
- computers and computer-aided design (CAD) software
- corrosion prevention treatment requirements of cut sheets
- design concepts and performance measures for various roof draining components for all types of roofs
- electrolysis and problems associated with the use of dissimilar metals
- implications of climate variations for the design of roof draining components
- job safety analysis (JSA) and safe work method statements (SWMS)
- levelling and alignment processes
- process of planning, sizing and documenting the layout of roof drainage systems
- relevant statutory requirements related to planning, sizing and documenting the layout of roof drainage systems
- SI system of measurements
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, Australian standards and specifications to the planning, sizing and layout of roof drainage systems
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- as a minimum, the ability to design, size and document the layout of a roof drainage system for three varied roof types, including at least one type incorporating eaves gutter and one type for a commercial building incorporating box gutters, sumps or rain heads, ensuring:
  - application of sustainability principles and concepts
  - correct identification of details of the plan
  - correct selection and use of appropriate processes, tools and equipment
  - completion of all work to specification
  - compliance with regulations, relevant Australian standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will

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usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a

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number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances
  - other machines
  - surrounding structure and facilities
  - trip hazards
  - underground services
  - use of tools and equipment
  - work site visitors and the public

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- working at heights
  - working in confined spaces
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Tools and equipment may include:

- computers running appropriate CAD software
- drawing instruments
- ladders
- laser measuring devices
- measuring equipment.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - National Construction Code
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards, including:
  - AS/NZS3500 National plumbing and drainage: Part 3.2 Stormwater drainage
  - SAA and SNZ HB 114:1998 Guidelines for design of eaves and box gutters
- safe work procedures relating to planning, sizing and documenting the layout of roof drainage systems
- signage

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- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Materials for design of roof drainage systems may include:

- drafting and drawing materials
- plans and specifications
- manufacturer catalogues and specifications.

Components of roof drainage system may include:

- downpipes
- gutters
- rain heads
- sumps.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient design principles are used throughout to minimal environmental impact
  - efficient use of material are incorporated in the design including recycling of material
  - rainwater harvesting concepts are applied
  - efficient energy usage
  - disposing of waste material to ensure minimal environmental impact.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

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Custom Content Section

Not applicable.

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CPCPSN3011B Plan layout of a residential sanitary plumbing system

Modification History

Minor changes throughout the unit
Equivalent to CPCPSN3011A

Unit Descriptor

This unit of competency specifies the outcomes required to plan the layout, size and install a sanitary plumbing system for residential buildings.

Application of the Unit

Site location for application of the design will be domestic, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Not applicable

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	**Prepare for work.**	1.1	Information, plans and specifications are obtained for planned work activity.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with planning the layout of sanitary plumbing systems are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	Tools and equipment for planning the layout of sanitary plumbing systems, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient planning of the layout of sanitary plumbing systems.
2	**Plan system layout.**	2.1	Site inspection is undertaken to determine job requirements.
		2.2	Quantity, location and type of ***fixtures*** are determined from design drawings, plans and elevations and other relevant ***information***.
		2.3	Layout of ***sanitary plumbing system*** is planned according to plans and relevant Australian standards.
		2.4	***Materials*** and fixtures required are determined from proposed design.
		2.5	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
		2.6	Plans are recorded according to workplace requirements.

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3 Clean up.

3.1 Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.

3.2 Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.

3.3 Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - identify requirements
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - record plans
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to identify and accurately report to appropriate personnel any faults in tools, equipment or materials:
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- application of various sanitary and drainage fixtures and appliances
- characteristics and the application of different pipe systems, including their fittings and fixture supports, and fixing and joining techniques
- job safety analysis (JSA) and safe work method statements (SWMS)
- principles of drainage

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- principles of sanitary plumbing
- process of planning the layout of sanitary plumbing systems
- relevant statutory requirements related to sanitary plumbing systems
- SI system of measurements
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, Australian standards and specifications to the layout of a sanitary plumbing system for a residential type building
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, planning the layout for a sanitary plumbing system of a three-storey residence, which includes a range of residential fixtures, connecting all fixtures to a legal point of discharge, ensuring:
  - sustainability principles and concepts are applied
  - correct identification of details of the plan
  - appropriate sequencing of work and identification of materials and resources required
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, relevant Australian standards and organisational quality procedures and processes
  - application of sustainability principles and concepts
  - communicating and working effectively

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and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to

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be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and

- electrical risks and hazards
- handling of materials
- hazard control

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regulations and may include:

- hazardous materials and substances
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- use of firefighting equipment
- use of first aid equipment
- use of tools and equipment
- workplace environment and safety.

Environmental requirements may include:

- clean-up protection
- waste management.

Quality assurance requirements may include:

- environment policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Fixtures are to include:

- all authorised residential fixtures.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- maps
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements

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- plumbing regulations
- relevant Australian standards
- safe work procedures relating to the design of sanitary plumbing systems
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Sanitary plumbing system may include:

- elevated pipework
- fully vented
- fully vented modified
- revass
- single stack
- single stack modified
- other approved methods.

Materials may include:

- drawing instruments
- measuring equipment
- plans, including building plan, sanitary plan and drainage plan.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient energy use
  - efficient use and recycling of material
  - correct handling of hazardous materials
  - disposing of waste material to ensure minimal environmental impact
  - selecting appropriate components to ensure minimal environmental impact.

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Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPSN3022A Install discharge pipes

Modification History

Prerequisite unit changed
Minor changes throughout the unit
Not equivalent to CPCPSN3012A

Unit Descriptor

This unit of competency specifies the outcomes required to install pipework from soil and wastewater fixtures to a stack or drain.

Application of the Unit

Site location for work application may be either domestic or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	**Prepare for work.**	1.1	Plans and specifications are obtained and fixture position is determined.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with installing sewage discharge pipes are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment*** for installing sewage discharge pipes, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient installation of sewage discharge pipes.
2	**Identify installation requirements.**	2.1	Position of discharge pipes is determined according to plans and specifications, relevant Australian standards, site requirements and other relevant ***information*** and does not cause damage or interference to surrounding structures.
		2.2	Quantity and type of ***materials*** required are calculated from design drawings and specifications and comply with relevant Australian standards and authorities' requirements.

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		2.3	Allowances for fabrication and assembly are determined and transferred.
		2.4	Materials and equipment are identified, ordered and collected according to workplace procedures.
		2.5	Materials and equipment are checked for compliance with relevant Australian standards, docket and order forms, and for acceptable condition.
		2.6	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
3	**Install and test pipe system.**	3.1	***Pipe system*** is set out to comply with plans, specifications and relevant Australian standards.
		3.2	Fixings and supports are installed to manufacturer recommendations, job plans and specifications, and relevant Australian standards.
		3.3	Pipes are installed and jointed according to relevant Australian standards, without damage or distortion to pipework, surrounding environment and other services.
		3.4	Pipe system is tested to comply with relevant Australian standards and adjusted.
4	**Clean up.**	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - identify requirements
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - record plans
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- characteristics and application of different materials, pipe fittings and supports, including fixing and joining techniques
- job safety analysis (JSA) and safe work method statements (SWMS)
- levelling and alignment processes

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- process of installing sewage discharge pipes
- processes for accessing information and for calculating material requirements
- properties and characteristics of sewage, including temperature implications and discharges
- relevant statutory requirements related to installing discharge pipes
- SI system of measurements
- standards applicable to the installation
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, Australian standards and specifications to install sewage discharge pipes
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications and using any two approved materials, installing two fixture discharge pipes:
  - direct to a below-ground drain
  - direct to drain via elevated pipework, which includes at least one expansion fitting
  - waste fixture to a drain via a gully (a combination of soil and waste fixtures must be included), ensuring:
    - application of sustainability principles and concepts
    - correct identification of location, design and details of proposed installations
    - correct selection and use of appropriate processes, tools and equipment
    - completion of all work to specification
    - compliance with regulations, relevant Australian standards and organisational quality procedures and processes
    - communicating and working effectively and safely with others.

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Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

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Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - dirt mounds
  - electricity

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- hazardous materials and substances
  - other machines
  - recently filled trenches
  - surrounding structure and facilities
  - traffic control
  - trip hazards
  - underground services
  - use of tools and equipment
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Quality assurance requirements may include:

- environment policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- dropsaw
- hacksaw
- hand and power tools
- heating equipment
- lifting and load shifting equipment, including:
  - chain blocks
  - elevated work platforms

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- forklifts
- hand trolleys
- hoists and jacks
- limited height scaffolding
- rollers
- measuring equipment
- threading and bending equipment.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to installing sewage discharge pipes
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Materials may include:

- any material authorised for use.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient energy use
  - efficient use and recycling of material
  - correct handling of hazardous materials
  - disposing of waste material to ensure minimal environmental impact

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- selecting appropriate components to ensure minimal environmental impact.

Pipe systems may include:

- direct or indirect to drains
- direct to stack
- elevated pipework.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPSN3023A Fabricate and install sanitary stacks

Modification History

Prerequisite unit changed
Minor changes throughout the unit
Not equivalent to CPCPSN3013A

Unit Descriptor

This unit of competency specifies the outcomes required to fabricate and install sanitary stacks for soil and waste discharges.

Application of the Unit

Site location for work application may be either domestic or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	**Prepare for work.**	1.1	Plans and specifications are obtained for the planned work activity.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with fabricating and installing sanitary plumbing systems are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment*** for fabricating and installing sanitary plumbing systems, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient planning, fabrication and installation of sanitary plumbing systems.
2	**Identify installation requirements.**	2.1	Venting requirements are checked for compliance with requirements of relevant Australian standards, plans and specifications.
		2.2	Stack design and branch positions are checked for compliance with relevant Australian standards, authorities' requirements, job plans and specifications, and relevant ***information***.

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		2.3	Position of sanitary stacks is determined from plans, specifications, relevant Australian standards and site requirements and so as not to cause damage and interference to surrounding structures.
		2.4	Quantity and type of ***materials*** required are calculated from design drawings and specifications and comply with relevant Australian standards and local authorities' requirements.
		2.5	Allowances for fabrication and assembly are determined and transferred.
		2.6	Materials and equipment are identified, ordered and collected according to workplace procedures.
		2.7	Materials and equipment are checked for compliance with relevant Australian standards, docket and order forms, and for acceptable condition.
		2.8	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
3	**Fabricate, install and test pipe system.**	3.1	***Plumbing system*** is set out to comply with job plans, specifications and relevant Australian standards.
		3.2	Fixings and supports are installed to manufacturer recommendations, relevant Australian standards, plans and specifications.
		3.3	Pipes are fabricated, installed and jointed in specified location according to job plans, specifications and relevant Australian standards, without causing damage or distortion to pipework or surrounding environment and other services.
		3.4	Pipe system is tested to comply with relevant Australian standards and adjusted.
4	**Clean up.**	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.

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4.3 Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - identify requirements
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - record plans
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- characteristics and the application of different pipe fittings and fixture supports, including fixing and joining techniques
- classification of assembly types and identification of assembly components
- job safety analysis (JSA) and safe work method statements (SWMS)
- levelling and alignment processes

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- materials handling processes
- performance measures and characteristics of the materials used in the required soil and waste stack assembly
- process of fabricating and installing sanitary stacks
- processes for accessing information and for calculating material requirements
- product and service standards applicable to the installation
- properties of soil and waste discharges, including temperature and corrosive discharges
- relevant statutory requirements related to installing stacks, discharge pipes and vents
- SI system of measurements
- systems of sanitary plumbing

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- given instructions, locating, interpreting and applying relevant information, Australian standards and specifications to fabricate and install a sanitary stack for a residential building.
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, fabricating and installing a sanitary stack system of plumbing, to connect future fixtures from two floor levels; with fixtures to include a WC, bath, basin, shower and floor waste gully at each floor with fabrication of at least two branches in copper tube (minimum of DN50), ensuring:
  - application of sustainability principles and concepts
  - correct identification of location, design and details of proposed installation
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, relevant Australian standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources

This competency is to be assessed using standard and

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for assessment

authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and

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the practical requirements of the workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - dirt mounds
  - electricity
  - hazardous materials and substances
  - other machines
  - recently filled trenches
  - surrounding structure and facilities

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- traffic control
- trip hazards
- underground services
- use of tools and equipment
- work site visitors and the public
- working at heights
- working in confined spaces
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Quality assurance requirements may include:

- environment policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- dropsaw
- hacksaw
- hand and power tools
- heating equipment
- lifting and load shifting equipment, including:
  - chain blocks
  - elevated work platforms
  - forklifts
  - hand trolleys
  - hoists and jacks
  - restricted height scaffolding

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- rollers
- measuring equipment
- threading and bending equipment.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to fabricating and installing sanitary stacks
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Materials may include:

- copper (Cu)
- polymer
- cast iron
- other approved materials.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient energy and water use
  - efficient use and recycling of material
  - correct handling of hazardous materials
  - disposing of waste material to ensure minimal environmental impact
  - selecting appropriate components to ensure

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minimal environmental impact.

Plumbing systems may include:

- elevated pipework
- fully vented
- fully vented modified
- revass
- single stack
- single stack modified
- other approved methods.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPSN3024A Install and fit off sanitary fixtures

Modification History

Prerequisite unit changed
Minor changes throughout the unit
Not equivalent to CPCPSN3014A

Unit Descriptor

This unit of competency specifies the outcomes required to install and fit off sanitary fixtures. It applies to the installation of sanitary plumbing, including the connection of discharge pipes to sanitary plumbing and drainage, including soil and waste fixtures.

Application of the Unit

Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	**Prepare for work.**	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with installing and fitting off sanitary fixtures are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient installation and fitting off of sanitary fixtures.
2	**Identify installation requirements.**	2.1	Position of ***sanitary fixtures*** is determined according to plans, specifications and site requirements.
		2.2	Quantity and type of ***materials***, including ***pipe materials*** required, are calculated from design drawings and specifications.
		2.3	Materials and equipment are identified, ordered and collected according to workplace procedures.
		2.4	Materials and equipment are checked for compliance with relevant Australian standards, docket and order form, and for acceptable condition.

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		2.5	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
3	**Install and fit off sanitary fixtures.**	3.1	Set out is checked for compliance with design drawings, manufacturers' instructions, relevant authorities' requirements and ***information***.
		3.2	Fixtures are positioned and installed to comply with plans, specifications and manufacturer requirements.
		3.3	Fixtures, components and pipework are assembled, installed and tested to manufacturer requirements, job specification and relevant Australian standards.
		3.4	Fixtures are installed and connected without damage or distortion to fixture, pipework, surrounding environment or other services.
		3.5	Completed installation is checked for correct functioning and compliance with specifications.
4	**Clean up.**	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - identify requirements
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace written documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - record written plans
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to install sanitary plumbing, including connecting discharge pipes to sanitary plumbing and drainage and installing sanitary fixtures
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- characteristics and the application of different pipe fittings and fixture supports, including fixing and joining techniques
- job safety analysis (JSA) and safe work method statements (SWMS)
- levelling and alignment processes

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- performance measures and characteristics of sanitary fixtures
- process of installing and fitting off sanitary fixtures
- processes for accessing information and for calculating material requirements
- relevant statutory, authority and manufacturer requirements related to installing and fitting off sanitary fixtures
- SI system of measurements
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, Australian standards and specifications to install and fit off sanitary fixtures
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, setting out, installing and fitting off the following sanitary fixtures: a water closet, shower base, sink, bath, basin, dishwashing machine, and a wall hung urinal, ensuring:
  - application of sustainability principles and concepts
  - correct identification of location, design and details of the proposed installations
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, relevant Australian standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

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Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning

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experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances
  - services
  - surrounding structure and facilities
  - trip hazards
  - use of tools and equipment
  - work site visitors and the public

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- working at heights
  - working in confined spaces
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements may include:

- clean-up protection
- waste management.

Quality assurance requirements may include:

- environment policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- hand and power tools
- heating, cutting and bending equipment
- ladders
- lifting and load shifting equipment, including:
  - chain blocks
  - elevated work platforms
  - forklifts
  - hand trolleys
  - hoists and jacks
  - restricted height scaffolding
  - rollers
- measuring equipment.

Sanitary fixtures are as authorised and may include:

- basins
- baths
- clothes washing machines
- dishwashing machines

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- shower bases
- sinks
- spa baths
- troughs
- wall hung urinals
- water closets.

Materials to connect sanitary fixtures may include:

- copper (Cu)
- copper alloy
- high density polyethylene (HDPE)
- polyvinyl chloride (PVC)
- sanitary fixtures
- stainless steel pipes
- other approved materials.

Pipe materials may include:

- copper
- copper alloy
- polymer
- stainless steel pipes
- other approved materials.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient energy and water use
  - efficient use and recycling of material
  - use of sustainable water efficient products
  - correct handling of hazardous materials
  - disposing of waste material to ensure minimal environmental impact
  - selecting appropriate components to ensure minimal environmental impact.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos

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- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to installing and fitting off sanitary fixtures
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPSN3025A Install pre-treatment facilities

Modification History

Prerequisite unit changed
Minor changes throughout the unit
Not equivalent to CPCPSN3015A

Unit Descriptor

This unit of competency specifies the outcomes required to install pre-treatment facilities designed to intercept and retain prohibited discharges to the sanitary plumbing and drainage system.

Application of the Unit

Site location for work application may be either domestic or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	**Prepare for work.**	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with installing pre-treatment facilities are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment*** for installing pre-treatment facilities, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient installation of ***pre-treatment facility***.
2	**Identify installation requirements.**	2.1	Pre-treatment facility is identified to meet the prohibited discharge requirement, and located to meet installation requirements, plans, specifications, authorities' requirements and relevant ***information***.
		2.2	Materials are identified, ordered and collected according to workplace procedures.
		2.3	Materials are checked for compliance with docket and order form and for acceptable condition.
		2.4	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.

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3	**Install and test pre-treatment facility.**	3.1	Set out is checked for compliance with plans, specifications and authorities' requirements.
		3.2	Existing or required pipework is verified as compliant with relevant Australian standards, and manufacturer and authorities' requirements.
		3.3	Pre-treatment facility is installed according to authorities' requirements and manufacturer specifications.
		3.4	Installation is tested for correct functioning and compliance with specifications and authorities' requirements.
4	**Clean up.**	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - identify requirements
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace written documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - record written plans
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to install pre-treatment facilities to intercept and retain prohibited discharges to the sanitary plumbing and drainage system
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- classification of assembly types and identification of assembly components
- fixing and joining techniques and methods
- job safety analysis (JSA) and safe work method statements (SWMS)

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- levelling and alignment processes
- materials handling processes
- process of installing pre-treatment facilities
- processes for accessing information and for calculating material requirements
- prohibited waste discharges to the sewer and their properties and effects
- relevant statutory requirements related to installing pre-treatment facilities
- SI system of measurements
- types and purpose of pre-treatment facilities
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, Australian standards and specifications to install and test pre-treatment facilities
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, locating, installing and testing two different pre-treatment facilities from a sanitary plumbing or drainage system, ensuring:
  - application of sustainability principles and concepts
  - correct identification of location, design and details of the proposed installations
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, relevant Australian standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will

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usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a

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number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - dirt mounds
  - electricity
  - hazardous materials and substances
  - other machines
  - recently filled trenches
  - surrounding structure and facilities
  - traffic control
  - trip hazards

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- underground services
  - use of tools and equipment
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements are to cover water quality management and may include:

- clean-up protection
- waste management.

Quality assurance requirements may include:

- environment policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- excavation tools
- hand and power tools
- measuring equipment
- tools and equipment, including:
- lifting and load shifting equipment
  - chain blocks
  - forklifts
  - hand trolleys
  - hoists and jacks
  - mechanical excavation equipment
  - rollers
- trench shoring equipment.

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Pre-treatment facilities:

- may include:
  - acid traps and neutralisers
  - cooling interceptors
  - grease traps
  - plaster and clay traps
  - silt interceptors
  - solid traps
  - solvent and oil interceptors
- may be installed in such locations as:
  - butchers
  - carparks
  - dental surgeries
  - food halls and outlets
  - hospitals
  - kitchens
  - laboratories
  - mining sites
  - processors of meat, chicken, milk and smallgoods
  - vehicle servicing and repair establishments
- may be permanent or temporary (portable).

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to installing pre-treatment facilities
- signage

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- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient energy and water use
  - efficient use and recycling of material
  - correct handling of hazardous materials
  - disposing of waste material to ensure minimal environmental impact
  - selecting appropriate components to ensure minimal environmental impact.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPSN3026A Install sewerage pumpsets

Modification History

Minor change to unit title
Prerequisite unit updated
Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPSN3016A

Unit Descriptor

This unit of competency specifies the outcomes required to install sewerage pumps, and install and test small bore macerators.

Application of the Unit

Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	**Prepare for work.**	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with installing sewerage pumpsets are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment*** for installing sewerage pumpsets, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient installation of ***sewerage pumpsets***.
2	**Identify installation requirements.**	2.1	Location of pump is determined following site inspection.
		2.2	Pump base requirements are determined from plans and specifications and other relevant ***information***.
		2.3	***Materials*** and equipment are identified, ordered and collected according to workplace procedures.
		2.4	Materials and equipment are checked for compliance with standards, docket and order form, and for acceptable condition.

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		2.5	***Sustainability principles and concepts*** are applied throughout the installation.
3	**Install sewerage pump equipment.**	3.1	Pump is set out to comply with plans, specifications, site requirements or job instructions, with consideration given to the location of existing services.
		3.2	Pumping equipment is installed in specified locations using recommended fixings.
		3.3	Pipework and ***pump controls*** are connected according to plans, specifications, manufacturer requirements and standards.
		3.4	Pumping equipment and related pipework are tested according to standards and manufacturer recommendations, and test data is recorded in required format.
4	**Clean up.**	4.1	Work area is cleared and materials disposed of, reused or recycled according to state and territory legislation and workplace procedures.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - identify requirements
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace written documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - record written plans
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to install and test sewerage pumps and small bore macerators
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- atmospheric pressure
- fixing techniques
- job safety analysis (JSA) and safe work method statements (SWMS)
- levelling and alignment processes

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- performance measures for various sewerage pumpsets
- process of installing sewerage pumpsets
- properties of sewage, including pressure and flow rates
- relevant statutory requirements related to installing sewerage pumpsets
- SI system of measurement
- standards applicable to the installation
- use of test equipment and procedures
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to install and test pre-treatment facilities
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, installing a small bore macenator from a water closet to an approved point of discharge up to 4 metres away, ensuring:
  - application of sustainability principles and concepts
  - correct identification of location, design and details of the proposed installations
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or

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Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.
- Validity and sufficiency of evidence requires that:
- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken

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at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - identifying and testing for electrical hazards
  - dirt mounds
  - hazardous materials and substances
  - other machines
  - recently filled trenches
  - surrounding structure and facilities
  - traffic control
  - trip hazards
  - underground services
  - use of tools and equipment

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- work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Quality assurance requirements may include:

- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- hand and power tools
- measuring and alignment tools
- tools and equipment, including:
  - chain blocks
  - concreting tools
  - forklifts
  - hand trolleys
  - hoists and jacks
  - lifting and load shifting equipment
  - rollers.

Sewerage pumpsets may include:

- compressed air injectors
- small bore macerators
- wet wells, including submersible and non-submersible pumps.

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Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to installing sewerage pumpsets
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

***Materials* may include:**

- sewerage pumpsets, motors and fittings.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient use of material
  - correct disposal of waste
  - selecting appropriate components to ensure minimal environmental impact.

***Pump controls* may be:**

- automatic controls, which may be float, level or flow switches
- manual.

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Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPSN4011B Design and size sanitary plumbing systems

Modification History

Minor changes throughout the unit
Equivalent to CPCPSN4011A

Unit Descriptor

This unit of competency specifies the outcomes required to design, size and document the layout of sanitary plumbing systems for multi-floor buildings.

Application of the Unit

Site location for application of the plans will be residential or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	**Prepare for planning.**	1.1	Nature and scope of planning task are identified and confirmed.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with planning, sizing and documenting the layout of sanitary pipework and fixtures are adhered to throughout the work.
		1.3	Work is organised and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.4	***Tools and equipment*** required for planning, sizing and documenting the layout of sanitary pipework and ***fixtures***, including personal protective equipment, are selected and checked for serviceability.
		1.5	Work area in which planning process is to be conducted is prepared.
2	**Identify system requirements.**	2.1	***Information*** and specifications for required ***system*** work are obtained and confirmed, if necessary by site inspection.
		2.2	Regulations and Australian standards relevant to the work are consulted and applied to all aspects of the work.
		2.3	Quantity, location and type of fixtures are determined from design drawings, plans and elevations.
		2.4	Fixture unit loading is determined according to relevant Australian standards and regulatory authorities' requirements.
		2.5	System is sized according to relevant Australian standards, and regulatory authorities' and workplace requirements.

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3	**Plan system layout.**	3.1	Layout of sanitary pipework and fixtures is planned according to building plans, relevant Australian standards and workplace procedures.
		3.2	***Materials*** required are specified and optimised according to relevant Australian standards from the proposed design.
		3.3	Plans are recorded according to regulatory authorities' and workplace requirements.
		3.4	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
4	**Restore work area.**	4.1	Work area is restored according to workplace procedures.
		4.2	Tools and equipment used in the process are refurbished and left according to workplace procedures.
		4.3	Documentation, including work backup, is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - identify requirements, including system requirements
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- literacy skills to:
  - complete workplace documentation
  - record plans
  - read and interpret:
    - documentation from a variety of sources
    - regulations, relevant Australian standards, plans, specifications and drawings
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
  - document the layout of sanitary pipework and fixtures
  - identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- accessing relevant information sources for the work activity
- Australian standards applicable to the system
- characteristics and the application of different pipe systems, including their fittings and

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fixture supports, and fixing and joining techniques
- computers and computer-aided design software
- handling of hazardous waste
- infectious diseases
- job safety analysis (JSA) and safe work method statements (SWMS)
- pipe materials and sanitary fixtures
- principles of drainage
- principles of sanitary plumbing
- process of planning, sizing and documenting the layout of sanitary pipework and fixtures
- relevant statutory requirements related to planning, sizing and documenting the layout of sanitary plumbing systems
- SI system of measurements
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, Australian standards and specifications to planning, sizing and documenting the layout of sanitary pipework and fixtures for a multi-floor building
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- as a minimum, the ability to design, size and document the layout details for a commercial (Class 6) and residential building; using two approved sanitary plumbing systems to a minimum of six floors, inclusive of a basement, to include fixtures on each floor level (excluding the basement), ensuring:
  - application of sustainability principles and concepts
  - correct identification of details of the plan
  - correct selection and use of appropriate processes, tools and equipment
  - completion of all work to specification
  - compliance with regulations, relevant Australian standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

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Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience

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must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances
  - other machines
  - surrounding structure and facilities
  - trip hazards
  - underground services
  - use of tools and equipment
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental

- clean-up protection

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requirements cover water quality management and may include:

- stormwater protection
- waste management.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- drawing instruments
- measuring equipment
- tools and equipment, which may include computers running appropriate computer-aided design software.

Fixtures may include:

- ablution trough
- bain marie
- basin
- bath
- bidet
- domestic and commercial clothes washing machine
- domestic and commercial dish washing machine
- glass washing machine
- laundry trough
- shower
- sink
- slop hopper
- urinal
- WC.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations

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- relevant Australian standards, including AS/NZS3500 National plumbing and drainage: Part 2 Sanitary plumbing and drainage
- safe work procedures relating to planning, sizing and documenting the layout of sanitary pipework and fixtures
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

System may include:

- approved sanitary plumbing systems
- discharge pipes
- elevated pipework
- soil and waste fixtures.

Materials may include:

- building plans and specifications, including drainage plans.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient design principles that have minimal environmental impact
  - efficient use of material in the design, including recycling of material
  - efficient energy and water use
  - disposing of waste material to ensure minimal environmental impact.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

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Custom Content Section

Not applicable.

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CPCPWT3020A Connect and install storage tanks to a domestic water supply

Modification History

Prerequisite unit changed
Minor changes throughout the unit
Not equivalent to CPCPWT3010A

Unit Descriptor

This unit of competency specifies the outcomes required to connect and install storage tanks to a domestic water supply.

Application of the Unit

This unit of competency applies to the connection and installation of storage tanks to a residential or commercial water distribution pipe system, which may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	**Prepare for work.**	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with connecting static storage tanks to a water supply system are followed.
		1.3	***Quality assurance requirements*** are identified and followed according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	***Tools and equipment***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient connection and installation.
2	**Identify installation requirements.**	2.1	Required ***materials*** that comply with relevant Australian standards and job specifications are determined from plans and specification.
		2.2	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
		2.3	Quantities of required materials are calculated from plans and specifications.
		2.4	Materials and equipment are ordered and collected according to workplace procedures.
		2.5	Materials and equipment are checked for compliance with relevant Australian standards, docket and order

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form, and for acceptable condition.

3	**Install and test storage tank.**	3.1	Storage tank and associated pipework are set out according to plans, specifications and job instructions.
		3.2	Pipe supports and fixings that comply with relevant Australian standards are installed to plans and manufacturer specifications.
		3.3	Tank, piping and materials are installed according to plans, specifications and relevant Australian standards.
		3.4	Jointing systems are confirmed as compliant with relevant Australian standards.
		3.5	Installed system is pressure tested and commissioned according to relevant Australian standards and job specifications.
		3.6	Test data is recorded in format required by job specifications and quality assurance procedures.
4	**Clean up.**	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specifications.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	***Information*** is accessed and documentation completed according to regulatory authorities and workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow and give instructions
  - record test results in writing
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - record test results in writing
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to:
  - work with others to action tasks
  - relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
  - determine system requirements for installation of a static storage tank
  - identify and report faults in tools, equipment and materials
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communications technology

Required knowledge

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- characteristics and application of different pipe fittings and fixture supports, including fixing and joining techniques
- function and operation of a range of taps and valves
- job safety analysis (JSA) and safe work method statements (SWMS)
- levelling and alignment processes
- pressure test systems and procedures
- procedures for accessing information and processes for calculating material requirements
- process for connecting static storage tanks
- relevant statutory requirements related to the connection of static storage tanks
- SI system of measurement
- structural systems, building materials and building services
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- locate, interpret and apply relevant information, Australian standards and specifications to connect static water storage tanks
- apply safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- connect residential or commercial static water storage tanks according to backflow protection principles
- as a minimum, given the plans and specifications, connecting and commissioning an approved static water storage tank to a residential or commercial water distribution pipe system to include correct air gap, operational water level, overflow requirements, minimum outlet size, tank placement, safe tray and safe waste (to meet the specified location and installation requirements) ensuring:
  - application of sustainability principles and concepts
  - correct identification of requirements, design and details of the proposed installation
  - correct selection and use of appropriate processes, tools and equipment
  - completion of all work to specification
  - compliance with regulations, relevant Australian standards, and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific

This unit of competency is to be assessed using relevant

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resources for assessment

Australian standards and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- MSDS
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning

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experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function, for example:

- CPCPRF2023A Collect and store roof water
- CPCPWT3023A Install and commission water heating systems.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of tools and equipment
  - work site visitors and the public
  - working at heights
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Quality assurance requirements may include:

- Australian standards
- environment policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

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Tools and equipment may include:

- chain blocks
- cutting and threading equipment
- elevated work platforms
- forklifts
- hand and mechanical excavation equipment
- hand and power tools
- hand trolleys
- hoists and jacks
- ladders
- lifting and load shifting equipment
- rollers
- scaffolds
- testing equipment
- trench shoring equipment
- welding equipment.

Materials may include:

- copper, brass, polymer or cement-lined cast iron pipes
- fibre glass, steel or polymer storage tanks
- other approved pipes and materials.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - selecting appropriate material to ensure minimal environmental impact
  - efficient energy and water use
  - efficient use and recycling of material, including minimising evaporation
  - siting of tank
  - overflow disposal and reuse
  - disposing of waste material to ensure minimal environmental impact.

***Information* may** include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements

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- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to connecting static storage tanks
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Competency field

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPWT3021A Set out and install water services

Modification History

Prerequisite unit changed
Minor changes throughout the unit
Not equivalent to CPCPWT3011A

Unit Descriptor

This unit of competency specifies the outcomes required to install heated, cold and tempered water services from the water supply to the fixture or points of discharge and storage.

Application of the Unit

Site location for work application may be either domestic or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	**Prepare for work.**	1.1	Drawings, plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with setting out and installing water services are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment*** for setting out and installing water piping systems, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient setting out and installation of water services.
2	**Identify installation requirements.**	2.1	Quantity and type of materials required are calculated from drawings and specifications or site inspection and comply with relevant Australian standards and other ***information***.
		2.2	***Materials*** and equipment are identified, ordered and collected according to workplace procedures.
		2.3	Materials and equipment are checked for compliance with relevant Australian standards, docket and order form, and for acceptable condition.
		2.4	***Sustainability principles and concepts*** are observed

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when preparing for and undertaking work process.

3	**Install and test pipe system.**	3.1	Pipelines and fixture connection points are set out according to drawings and specifications or job instructions, with consideration given to the location of existing services.
		3.2	Trenches are excavated according to relevant Australian standards and authorities' requirements.
		3.3	Installation of supports and clips are checked for compliance with job specification, authorities' requirements and manufacturer recommendations.
		3.4	Pipes are installed and jointed according to job specifications, design layout and relevant Australian standards without damage or distortion to pipework, or surrounding environment and other services.
		3.5	Installation to ***point of discharge*** is tested to comply with relevant Australian standards and authorities' requirements, and adjusted.
4	**Clean up.**	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - identify requirements
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to install pipework to carry drinking and non-drinking water from a water meter, rainwater tank, storage tank or heated water service to points of discharge and storage
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- characteristics and application of different pipes and fittings, including fixing and joining techniques and methods
- job safety analysis (JSA) and safe work method statements (SWMS)
- levelling and alignment processes

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- process of installing water piping systems
- processes for accessing information and for calculating material requirements
- properties of water, including pressure and flow rates
- regulations and requirements for non-drinkable water installations
- relevant statutory requirements related to installing water piping systems
- SI system of measurements
- Australian standards applicable to the installation
- use of test equipment and procedures
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, Australian standards and specifications to set out and install water services
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, planning layout, sizing, setting out, installing and testing water services from a meter or storage tank, to at least five heated/tempered and five cold outlets, including a water heater and a non-drinkable water source to at least two outlets, ensuring:
  - application of sustainability principles and concepts
  - correct identification of location, design and details of proposed installations
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, relevant Australian standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and

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environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace

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- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances
  - other machines
  - surrounding structure and facilities
  - trees
  - trip hazards

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- underground services
  - uneven and unstable terrain
  - use of tools and equipment
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Quality assurance requirements may include:

- environment policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- bending equipment
- crimping tools
- flaring tools
- hand and power tools
- hand excavation equipment
- measuring equipment
- pressure testing equipment
- silver brazing equipment
- tools and equipment, including:
  - chain blocks
  - elevated work platforms
  - forklifts

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- hand trolleys
- hoists and jacks
- lifting and load shifting equipment
- mechanical excavation equipment
- rollers
- scaffolding
- trench shoring equipment.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- maps
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to setting out and installing water piping systems
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Materials may include:

- those authorised for use
- factors influencing choice of materials, including:
  - characteristics of materials and products
  - condition of ground
  - environmental factors
  - nature of water conveyed
  - type of usage.

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Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient energy and water use
  - efficient use and recycling of material
  - heat retention
  - correct handling of hazardous materials
  - disposing of waste material to ensure minimal environmental impact
  - selecting appropriate components to ensure minimal environmental impact.

Point of discharge may be:

- an isolating valve, tap or fixture.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPWT3022A Install and adjust water service controls and devices

Modification History

Prerequisite unit changed
Minor changes throughout the unit
Not equivalent to CPCPWT3012A

Unit Descriptor

This unit of competency specifies the outcomes required to install water service controls and mixing devices used to manually control water mix and flow. It includes the basic adjustment and maintenance of correct flow operation for flushing devices, control valves, temperature control devices pumps and appliances, and excludes the commissioning and adjustment of backflow prevention devices and thermostatic mixing valves.

Application of the Unit

Site location for work application may be either domestic or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	**Prepare for work.**	1.1	Drawings, plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with installing and adjusting water service controls and devices are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment*** for installing and adjusting ***water service controls and mixing devices***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient installing and adjusting of water service controls and devices.
2	**Identify installation requirements.**	2.1	Service design requirements are identified from job specifications and according to relevant Australian standards using relevant ***information***.
		2.2	Service controls and mixing devices are selected according to relevant Australian standards, authorities' requirements and job specifications.
		2.3	Available pressure and number of fixtures are determined from job specifications.

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		2.4	Valve size is selected according to regulations, job specifications, manufacturer recommendations and design data.
		2.5	***Materials*** and equipment are identified, ordered and collected according to workplace procedures.
		2.6	Materials and equipment are checked for compliance with relevant Australian standards, docket and order form, and for acceptable condition.
		2.7	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
3	**Install and adjust devices.**	3.1	Devices and mixing valves are positioned and installed according to relevant Australian standards, job specifications, manufacturer recommendations and authorities' requirements.
		3.2	Pipework is flushed.
		3.3	Devices are commissioned and maintained to ensure correct flow operation according to relevant Australian standards, and manufacturer and job specifications.
		3.4	Customer is advised of correct operation of ***flushing devices***, ***control valves***, appliances and ***pumps***.
4	**Clean up.**	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - identify requirements
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to install and make basic adjustments to water flushing devices, control valves, pumps and appliances for heated and cold water services
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- characteristics of the materials and devices being installed
- effective isolation procedures
- hydraulics and mechanics
- job safety analysis (JSA) and safe work method statements (SWMS)
- process of installing service controls and devices

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- processes for accessing information and for calculating material requirements
- properties of water including pressure and flow rates
- relevant statutory requirements related to installing service controls and devices and requirements for backflow prevention devices
- SI system of measurements
- Australian standards applicable to the installation
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, Australian standards and specifications to install and adjust water service controls and devices
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, installing and providing basic adjustment for a cold water service incorporating both manual and programmed flushing devices and a heated/tempered water service consisting of a mixing tap and a tempering valve, ensuring:
  - application of sustainability principles and concepts
  - correct identification of location, design and details of proposed installations
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, relevant Australian standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources

This competency is to be assessed using standard and authorised work practices, safety requirements and

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for assessment

environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace

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- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- identifying and testing for electrical hazards
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - hazardous materials and substances
  - other machines
  - surrounding structure and facilities
  - trip hazards
  - underground services

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- use of tools and equipment
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Quality assurance requirements may include:

- environment policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- elevated work platforms
- hand and power tools
- ladders.

Water service controls and mixing devices:

- include:
  - back flow prevention devices (install only)
  - isolating valves
  - line strainers
  - metal bodied taps
  - pressure limiting valves
  - temperature control devices
  - thermostatic mixing valves (install only)
- types of appliances include:

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- automatic
- domestic
- industrial
- manual
- programmed.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to the installation and basic adjustment of water service controls and devices
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Materials may include:

- water flushing devices
- control valves
- pumps
- domestic and industrial appliances.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - heat retention
  - efficient energy and water use
  - efficient use and recycling of material

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- disposing of waste material to ensure minimal environmental impact
- selecting appropriate components to ensure minimal environmental impact.

Flushing devices may include:

- cisterns (manual, automatic and programmed on demand)
- flushometers (flush valves).

Control valves may include:

- automatic
- flow control
- isolation
- manual
- programmed
- safety.

Pumps may include:

- centrifugal and positive displacement.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPWT3023A Install and commission water heating systems

Modification History

Prerequisite unit changed
Minor changes throughout the unit
Not equivalent to CPCPWT3013A

Unit Descriptor

This unit of competency specifies the outcomes required to install and commission water heaters for domestic and commercial applications.

Application of the Unit

Site location for work application may be either domestic or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	**Prepare for work.**	1.1	Drawings, plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with installing water heaters, and workplace are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment*** for installing ***water heaters***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient installation of water heaters.
2	**Identify installation requirements.**	2.1	Installation position is assessed for compliance with authorities' requirements, manufacturer recommendations, relevant Australian standards, job specifications and location of other services using relevant ***information***.
		2.2	Quantity and type of materials required are calculated from job specifications and site inspection, and comply with relevant Australian standards.
		2.3	***Materials*** and equipment are identified, ordered and collected according to workplace procedures.

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		2.4	Materials and equipment are checked for compliance with relevant Australian standards, docket and order form, and for acceptable condition.
		2.5	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
3	**Install, commission and maintain system.**	3.1	Water heating system is installed according to relevant Australian standards, job specifications and manufacturer recommendations, and complies with authorities' requirements.
		3.2	Pipe joints are fitted correctly and according to relevant Australian standards.
		3.3	Installation is tested according to relevant Australian standards, manufacturer specifications and authorities' requirements.
		3.4	Water heating system is commissioned according to relevant Australian standards, manufacturer specifications and authorities' requirements.
		3.5	Water heating system is maintained according to manufacturer instructions.
4	**Clean up.**	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - identify requirements
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to install and commission low pressure, mains pressure, continuous flow and solar water heating systems
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- characteristics and application of different mounting fittings, including fixing and joining techniques and methods
- job safety analysis (JSA) and safe work method statements (SWMS)
- levelling and alignment processes
- performance measures for various water heaters

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- process of installing water heaters
- processes for accessing information and for calculating material requirements
- properties of water, including pressure and flow rates
- relevant statutory requirements related to installing water heaters
- SI system of measurements
- Australian standards applicable to the installation
- use of test equipment and procedures
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, Australian standards and specifications to install water heaters
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, planning the layout, and then installing and commissioning at least two different water heaters from the following:
  - a vented storage water heater, an unvented storage water heater, a continuous flow water heater, and a solar water heater
  - with one of these heaters being a manifold system, ensuring:
    - application of sustainability principles and concepts
    - correct identification of location, design and details of proposed installations
    - correct selection and use of appropriate processes, tools and equipment
    - completion of all work to specification
    - compliance with regulations, relevant Australian standards and organisational quality procedures and processes
    - communicating and working effectively and safely with others.

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Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a

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period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- identifying and testing for electrical hazards
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - hazardous materials and substances
  - other machines
  - surrounding structure and facilities

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- trip hazards
  - underground services
  - use of tools and equipment
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Quality assurance requirements may include:

- environment policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- flaring tools
- hand and power tools
- ladders
- lifting and load shifting equipment, including:
  - chain blocks
  - elevated work platforms
  - forklifts
  - hand trolleys
  - hoists and jacks
  - restricted height scaffolding
  - rollers
- mechanical bending equipment

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- silver brazing equipment.

Water heaters may include:

- electric storage heaters up to 630 litres
- heat exchange water heaters
- heat pump water heaters
- continuous flow water heaters
- other storage heaters up to 700 litres
- solar water heaters
- warm water systems
- other approved water heaters.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to installing water heaters
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Materials may include:

- water heaters and fittings, including solar panels for solar water heaters.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - selecting appropriate material to ensure minimal

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environmental impact
- heat retention
- efficient use and recycling of material
- efficient energy and water use
- disposing of waste material to ensure minimal environmental impact.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPWT3024A Install and maintain domestic water treatment equipment

Modification History

Prerequisite unit changed
Minor changes throughout the unit
Not equivalent to CPCPWT3014A

Unit Descriptor

This unit of competency specifies the outcomes required to install, test and maintain domestic water softeners, water coolers and water filtering equipment.

Application of the Unit

Site location for work application is domestic, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	**Prepare for work.**	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with installing water treatment equipment are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment*** for installing water treatment equipment, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient installation of ***water treatment equipment***.
2	**Identify installation requirements.**	2.1	Water treatment equipment requirements and location are determined according to job specifications or site inspection and relevant ***information***.
		2.2	Water system adjacent to the equipment is tested for appropriate pressure.
		2.3	***Materials*** and equipment are estimated from design drawings or job specification.
		2.4	Materials and equipment are identified, ordered and collected according to workplace procedures.

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		2.5	Materials and equipment are checked for compliance with relevant Australian standards, docket and order form, and for acceptable condition.
		2.6	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
3	**Install and test water treatment equipment.**	3.1	Water treatment equipment is installed according to relevant Australian standards and manufacturer specifications, and complies with authorities' requirements.
		3.2	Base is provided for water treatment equipment that complies with job specification or manufacturer instructions.
		3.3	Connections to water treatment equipment are checked for compliance with authorities' requirements and relevant Australian standards.
		3.4	Installation is pressure tested for leaks.
		3.5	Service lines are flushed according to relevant Australian standards.
		3.6	Appliance is commissioned according to manufacturer specifications.
4	**Maintain water treatment equipment.**	4.1	Service and maintenance requirements, including ***water filters***, are identified from manufacturer specifications or authorities' requirements.
		4.2	Replacement components are checked and fitted according to specification.
		4.3	Maintenance operations are conducted observing manufacturer and authorities' requirements.
5	**Clean up.**	5.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		5.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.

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5.3 Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - identify requirements
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- characteristics and application of different assemblies, including fixing and joining techniques and materials
- chemistry of water, including:
  - osmosis, filtration and purification
  - properties of hard and soft water, including sources of contamination, impurities, pressure and flow rates

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- job safety analysis (JSA) and safe work method statements (SWMS)
- process of installing water treatment equipment
- relevant statutory requirements related to installing water treatment equipment
- SI system of measurements
- Australian standards applicable to the installation
- use of test equipment and procedures
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, relevant Australian standards and specifications to install water treatment equipment
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, planning the layout, and then installing and commissioning either a domestic water filter or cooler or a domestic water softener or conditioner, indicating the continuing maintenance requirement for each installation and ensuring:
    - application of sustainability principles and concepts
    - correct identification of location, design and details of proposed installations
    - correct selection and use of appropriate processes, tools and equipment
    - completion of all work to specification
    - compliance with regulations, standards and organisational quality procedures and processes
    - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

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Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning

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experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- identifying and testing for electrical hazards
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - hazardous materials and substances
  - other machines
  - surrounding structure and facilities
  - trip hazards
  - underground services
  - use of tools and equipment

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- work site visitors and the public
- working at heights
- working in confined spaces
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Quality assurance requirements may include:

- environment policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- crimping tools
- flaring tools
- hand and power tools
- measuring and levelling equipment
- silver brazing equipment
- testing equipment.

Water treatment equipment may include:

- water coolers
- water softeners.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings

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- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to installing water treatment equipment
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Materials may include:

- water treatment appliances and fittings.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - selecting appropriate material to ensure minimal environmental impact
  - efficient insulation
  - efficient use and recycling of material
  - efficient energy and water use
  - disposing of waste material to ensure minimal environmental impact.

Water filters may include:

- cartridge filters
- disk filters
- reverse osmosis filters
- sand filters.

Unit Sector(s)

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Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPWT3025A Install water pumpsets

Modification History

Prerequisite unit changed
Minor changes throughout the unit and to unit title
Not equivalent to CPCPWT3015A

Unit Descriptor

This unit of competency specifies the outcomes required to install and test water pumps.

Application of the Unit

Site location for work application may be either domestic or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	**Prepare for work.**	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with installing water pumpsets are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment*** for installing water pumpsets, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient installation of ***water pumpsets***.
2	**Identify installation requirements.**	2.1	Location of pump is determined following site inspection.
		2.2	Pump base requirements are identified from drawings and specifications using relevant ***information***.
		2.3	Required ***materials*** and equipment are identified, ordered and collected according to workplace procedures.
		2.4	Materials and equipment are checked for compliance with relevant Australian standards, docket and order form, and for acceptable condition.
		2.5	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
3	**Install water pumpsets.**	3.1	Pump base is set out to comply with drawings and specifications.
		3.2	Pump base is constructed according to drawings and specifications.

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3.3 Pump and ***pump controls*** are installed according to relevant Australian standards, drawings, specifications and manufacturer instructions.

3.4 Fuel tank fitting, alignment of shafts and couplings, and the use of mechanical joints comply with relevant specifications and manufacturer instructions.

3.5 Pressure testing of piping system is conducted according to specifications.

3.6 Pumpset is tested according to specifications and test data is recorded in required format.

4 Clean up.

4.1 Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.

4.2 Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.

4.3 Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - identify requirements
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to install and test water pumps and a centrifugal pumpset
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- atmospheric pressure
- fixing techniques
- job safety analysis (JSA) and safe work method statements (SWMS)
- levelling and alignment processes
- performance measures for various water pumpsets

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- process of installing water pumpsets
- properties of water, including pressure and flow rates
- relevant statutory requirements related to installing water pumpsets
- SI system of measurements
- Australian standards applicable to the installation
- use of test equipment and procedures
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, Australian standards and specifications to install water pumpsets
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, planning the layout, and then installing and testing a centrifugal pump, ensuring:
  - application of sustainability principles and concepts
  - correct identification of location, design and details of proposed installations
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, relevant Australian standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

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Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and

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practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- identifying and testing for electrical hazards
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - hazardous materials and substances
  - other machines
  - surrounding structure and facilities
  - trip hazards
  - underground services
  - use of tools and equipment
  - work site visitors and the public
  - working at heights
  - working in confined spaces

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- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Quality assurance requirements may include:

- environment policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- chain blocks
- concreting tools
- forklifts
- hand and power tools
- hand trolleys
- hoists and jacks
- lifting and load shifting equipment
- measuring and alignment tools
- rollers.

Water pumpsets:

- may include:
  - multi-stage turbine
  - positive displacement
  - submersible and electric and compression ignition driven pumps
- may be:
  - belt-driven by an electric or petrol and diesel motor

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- close coupled
- long coupled with mechanical joints.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to installing water pumpsets
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Materials may include:

- circulating
- hydropneumatic pumping systems and fittings
- spa baths
- water pumpsets.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - selecting appropriate material to ensure minimal environmental impact
  - efficient use and recycling of material
  - efficient energy and water use
  - disposing of waste material to ensure minimal environmental impact.

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Pump controls may be:

- automatic controls, which may be float, level or flow switches
- manual.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPWT3026A Fit off and commission heated and cold water services

Modification History

Prerequisite unit changed
Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPWT3016A

Unit Descriptor

This unit of competency specifies the outcomes required to fit off and commission heated and cold water services to appropriate fixtures. It includes the provision for non-drinkable water applications.

Application of the Unit

Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	**Prepare for work.**	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with fitting off, connecting and commissioning heated and cold water services are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment*** for fitting off, connecting and commissioning heated and cold ***water services***, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient fitting off, connecting and commissioning of heated and cold water services.
2	**Identify installation requirements.**	2.1	Fit off, connections, fixtures and fittings and their location are identified according to job specifications or site inspection, using relevant ***information***.
		2.2	***Materials*** and equipment are estimated from drawings or job specification.
		2.3	Materials and equipment are identified, ordered and collected according to workplace procedures.

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		2.4	Materials and equipment are checked for compliance with relevant Australian standards, docket and order form, and for acceptable condition.
		2.5	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
3	**Make connections and test service.**	3.1	Final connections are made to heated and cold water services ensuring fixtures, jointing methods and appliances comply with relevant Australian standards and are made without damage to surrounding structures.
		3.2	Labels and signage are positioned for non-drinkable water services according to regulatory authorities' requirements.
		3.3	Water services are hydraulically tested to ensure connections are leak free.
		3.4	Valves, cisterns, taps and other components are checked for correct operation.
4	**Commission water services.**	4.1	Service lines are flushed according to relevant Australian standards and regulatory authorities' requirements.
		4.2	Water services are commissioned according to regulatory authorities' requirements and manufacturer specifications.
5	**Clean up.**	5.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		5.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		5.3	Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - identify requirements
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to fit off, connect, test and commission heated and cold water services to household fixtures and appliances
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- characteristics and application of different fittings and fixtures, including fixing and joining techniques and materials
- implications of cross connections and air gaps
- isolation processes and procedures
- job safety analysis (JSA) and safe work method statements (SWMS)

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- non-drinkable water processing, requirements and applications
- process of fitting off, connecting and commissioning heated and cold water services
- properties of water, including sources of contamination, impurities, pressure and flow rates
- relevant statutory requirements related to fitting off, connecting and commissioning heated and cold water services
- SI system of measurement
- Australian standards applicable to the work
- use of test equipment and procedures
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, Australian standards and specifications to fitting off, connecting and commissioning heated and cold water services
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, planning the layout, and then fitting off, connecting, testing and commissioning heated, tempered and cold (drinking and non-drinking) water services of a house, including bathroom, kitchen, laundry and outdoor connections, ensuring:
  - application of sustainability principles and concepts
  - correct identification of location, fit off, connections, testing and commissioning requirements
  - correct selection and use of appropriate processes, tools and equipment
  - completion of all work to specification
  - compliance with regulations, relevant Australian standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources

This competency is to be assessed using standard and

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for assessment

authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and

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the practical requirements of the workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- identifying and testing for electrical hazards
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - hazardous materials and substances
  - other machines
  - surrounding structure and facilities
  - trip hazards

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- underground services
- use of tools and equipment
- work site visitors and the public
- working at heights
- working in confined spaces
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- waste management.

Quality assurance requirements may include:

- environment policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- crimping tools
- hand and power tools
- flaring tools
- mechanical and bending tools
- silver brazing equipment
- testing equipment.

Water services include:

- non-drinkable water services.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings

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- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to fitting off, connecting and commissioning heated and cold water services
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Materials are as approved for heated, tempered and cold water services and may include:

- fixtures and fittings
- heaters
- water services.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - selecting appropriate material to ensure minimal environmental impact
  - heat retention
  - efficient use and recycling of material
  - efficient energy and water use
  - disposing of waste material to ensure minimal environmental impact.

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Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPWT3027A Connect irrigation systems from drinking water supply

Modification History

Prerequisite unit changed
Minor changes throughout the unit
Not equivalent to CPCPWT3017A

Unit Descriptor

This unit of competency specifies the outcomes required to connect irrigation and watering systems from a drinking water supply. It does not include the commissioning of backflow prevention devices or arrangements.

Application of the Unit

Site location for work application may be either domestic or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	**Prepare for work.**	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with connecting irrigation systems from a drinking water supply are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment*** for connecting irrigation systems, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient connection of irrigation systems from a drinking water supply.
2	**Identify installation requirements.**	2.1	Connection size and hazard rating are determined from plans, specification, relevant Australian standards and/or site inspection using relevant ***information***.
		2.2	Valve is sized according to plans and specification.
		2.3	Back flow prevention devices are confirmed as being according to hazard rating.
		2.4	***Materials*** and equipment are identified, ordered and collected according to workplace procedures.

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		2.5	Materials and equipment are checked for compliance with relevant Australian standards, docket and order form, and for acceptable condition.
		2.6	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
3	**Connect and test system.**	3.1	Excavation is set out and made according to plans and specifications and undertaken with consideration given to existing structures and services.
		3.2	Service pipe is isolated and cut to accommodate take off branch according to authorities' requirements.
		3.3	Back flow prevention device is fitted according to relevant Australian standards and manufacturer specifications.
		3.4	System is connected and flushed to required standard.
		3.5	Water supply is restored and system tested according to relevant Australian standards.
		3.6	Ground surface is restored.
4	**Clean up.**	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - identify requirements
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to cut into a water supply and install a take-off branch and fitting valves and backflow prevention devices for an irrigation or watering system
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- characteristics and application of different pipes and fittings, including fixing and joining techniques and methods
- drinking water supplies and protection measures
- implications of cross connections and air gaps
- job safety analysis (JSA) and safe work method statements (SWMS)

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- process of connecting irrigation systems from a drinking water supply
- processes for accessing information and for calculating material requirements
- properties of water, including pressure and flow rates
- relevant statutory requirements related to connecting irrigation systems from a drinking water supply
- SI system of measurement
- Australian standards applicable to the connection
- use of test equipment and procedures
- various types of irrigation systems and types of materials used
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, relevant Australian standards and specifications to connect an irrigation system from a drinking water supply
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, connecting an irrigation system to a drinking water supply, ensuring:
  - application of sustainability principles and concepts
  - correct identification of location, design and details of proposed installations
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, relevant Australian standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will

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usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a

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number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- identifying and testing for electrical hazards
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - hazardous materials and substances
  - other machines
  - surrounding structure and facilities
  - trees
  - trip hazards
  - underground services
  - uneven and unstable terrain
  - use of tools and equipment

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- work site visitors and the public
- working at heights
- working in confined spaces
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- waste management.

Quality assurance requirements may include:

- environment policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- chain blocks
- electrical bonding and bridging strap
- elevated work platforms
- forklifts
- hand and power tools
- hand excavation equipment
- hand trolleys
- hoists and jacks
- lifting and load shifting equipment
- measuring equipment
- mechanical excavation equipment
- rollers
- scaffolding
- silver solder and brazing equipment
- trench shoring equipment.

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Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to connecting irrigation systems from a drinking water supply
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Materials may include:

- backflow prevention devices
- copper tube
- fittings and connections
- joints
- polymer pipes
- valves.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - selecting appropriate material to ensure minimal environmental impact
  - efficient energy and water use
  - efficient use and recycling of material
  - disposing of waste material to ensure minimal environmental impact.

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Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPWT3028A Install water service

Modification History

Prerequisite unit changed
Minor changes throughout the unit, including to unit title
Not equivalent to CPCPWT3018A

Unit Descriptor

This unit of competency specifies the outcomes required to install a water supply system from the authorities' main to the metering device, according to water authorities' requirements.

Application of the Unit

Site location for work application may be either domestic or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	**Prepare for work.**	1.1	Site plans and specifications are obtained to establish location of the main.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with installing of a water service are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment*** for installing water services, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient installation of water services.
2	**Identify installation requirements.**	2.1	Location of service is determined following site inspection.
		2.2	Cables, conduits, pipes or other services are located and noted using relevant ***information***.
		2.3	Quantity and type of materials required are calculated or determined from plans and specifications.
		2.4	***Materials*** and equipment are identified, ordered and collected according to workplace procedures.
		2.5	Materials and equipment are checked for compliance with relevant Australian standards, docket and order form, and for acceptable condition.
		2.6	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.

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3	**Install and test water services.**	3.1	Pipelines and excavation areas are set out according to plans and specifications.
		3.2	Trenches are excavated according to relevant Australian standards and regulatory authorities' requirements, and to required size.
		3.3	Service control valve position is located.
		3.4	Main is drilled and ***tapped*** according to regulatory authorities' requirements and workplace procedures.
		3.5	Service line is marked out at 90 o to the main in a straight line to the meter.
		3.6	Selected process for installation of service pipe under roadway is undertaken according to authorities' requirements.
		3.7	Pipework is installed according to job specification, authorities' requirements and design layout, including fitting designated service control valves.
		3.8	Water meter is selected and installed according to authorities' requirements, surrounding environment and climatic conditions, and in consideration of servicing or cleaning requirements.
		3.9	Meter control valve is fitted at inlet according to authorities' requirements.
		3.10	Installation is tested for compliance with job specifications, relevant Australian standards and regulatory authorities' requirements.
		3.11	Excavation is backfilled according to specifications and authorities' requirements.
4	**Clean up.**	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	Documentation is completed according to workplace

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requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - identify requirements
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
  - tap into a water main and connect and install valves, flanges and pipework to a water meter
  - test the installation of valves, flanges and pipework to a water meter
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- characteristics and application of different pipes and fittings, including fixing and joining techniques and methods

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- job safety analysis (JSA) and safe work method statements (SWMS)
- levelling and alignment processes
- process of installing water services
- properties of water, including pressure and flow rates
- relevant statutory requirements related to installing water services
- SI system of measurement
- Australian standards applicable to the installation
- use of test equipment and procedures
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, Australian standards and specifications to install water services
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, determining the requirements, tapping into a water main, connecting a property service up to the outlet of a water meter, and testing the installation, ensuring:
  - application of sustainability principles and concepts
  - correct identification of location, design and details of proposed installation
  - correct selection and use of appropriate processes, tools and equipment
  - completion of all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

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Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and

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practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- identifying and testing for electrical hazards
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - hazardous materials and substances
  - other machines
  - surrounding structure and facilities
  - trip hazards
  - underground services
  - use of tools and equipment
  - work site visitors and the public
  - working at heights

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- working in confined spaces
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Quality assurance requirements may include:

- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- chain blocks
- forklifts
- hand and power tools
- hand trolleys
- hoists and jacks
- lifting and load shifting equipment
- manual excavation equipment
- mechanical excavation equipment
- rollers
- silver brazing equipment
- tapping tool
- test equipment
- trench shoring equipment.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- job drawings

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- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to installing water services
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Materials may include:

- those approved for use.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - selecting appropriate material to ensure minimal environmental impact
  - efficient use and recycling of material
  - efficient energy and water use
  - disposing of waste material to ensure minimal environmental impact.

Tapping may be performed:

- under pressure
- with the water turned off.

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Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPWT3029A Install water pipe systems

Modification History

Prerequisite unit updated
Changes to performance criteria, required skills, range statement and critical aspects
Not equivalent to CPCPWT3019A

Unit Descriptor

This unit of competency specifies the outcomes required to install and test water pipes larger than DN65, or large water services.

Application of the Unit

Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

1	**Plan and prepare.**	1.1	Work instructions and relevant ***information***, including plans, specifications, quality requirements and operational details relevant to the tasks, are obtained, confirmed and applied to the allotted task.
		1.2	***Work health and safety*** (WHS) requirements are obtained from the site safety plan and organisational policies and procedures, confirmed and applied to the allotted task.
		1.3	***Signage*** requirements are identified and obtained from project traffic management plan and ***traffic conditions*** and are implemented.
		1.4	Plant, ***tools and equipment*** selected to carry out tasks are consistent with requirements of the job, are checked for serviceability and any faults are rectified or reported.
		1.5	***Environmental requirements*** are identified from project environmental management plan, confirmed and applied to the allotted task.
2	**Set out and excavate.**	2.1	Work area and ***materials*** are prepared to support efficient installation of the pipe work.
		2.2	Dewatering requirements are determined and applied.
		2.3	Location, alignment direction, level and grade of mains pipe system are determined from job drawings and specifications.
		2.4	Works are set out to specification.
		2.5	Plant operator is advised of excavation requirements and levels are monitored.
		2.6	Mains pipe system support mechanism is installed according to plans, specifications and standards in compliance with ***statutory and regulatory authorities'*** requirements.

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3	**Install mains pipeline.**	3.1	Pipes are lowered and placed in position according to design specifications of ***mains pipe system***.
		3.2	Pipes are joined according to manufacturer specifications using ***pipe joining methods***.
		3.3	Pipes are placed and fittings, ***valves and flow control devices*** are fitted according to drawings, specifications and ***installation procedures***.
		3.4	Alignment level and grade are checked continuously for conformance with design plans and specifications.
		3.5	Side support or overlay is positioned beside the pipes.
		3.6	Mains pipe system support structure is checked.
		3.7	Backfill procedure is monitored to ensure work is completed to specification, where specified.
		3.8	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
4	**Test mains pipe system.**	4.1	***Testing*** is performed to relevant authorities' requirements as determined by specifications.
		4.2	Mains pipe system test procedures are performed, establishing pressurisation, functionality and serviceability.
		4.3	Test results are recorded and reported.
5	**Clean up.**	5.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		5.2	Plant, tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and standard work practices.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow and give instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete written records and reports of test results
  - complete other relevant workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- concrete and concrete fabrication
- confined space entry requirements
- dewatering
- equipment types, characteristics, technical capabilities and limitations
- excavation and trench safety
- installation of booster systems

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- installation of thrust blocks
- job safety analysis (JSA) and safe work method statement
- mains pipe systems and installation procedures
- mains water pressure
- materials safety data sheets (MSDS) and materials handling methods
- operational, maintenance and basic diagnostic procedures, including testing procedures
- plumbing industry terminology
- processes for interpreting engineering drawings
- processes for calculating pipeline grades and percentages
- project quality requirements
- sedimentation and erosion controls
- site and equipment safety requirements
- site isolation and traffic control responsibilities and authorities
- valves and flow control devices
- water reticulation

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- applying sustainability principles and concepts
- locating, interpreting and applying relevant information, standards and specifications
- complying with site safety plan, WHS regulations and state and territory legislation applicable to workplace operations
- complying with organisational policies and procedures, including quality requirements
- given the plans and specifications, installing six metres of DN100 mains pressure pipe system which is to include a change of direction or tee junction
- installing a mains pipe system which, as a minimum, includes two materials and one isolation valve
- safe and effective operational use of tools, plant and equipment
- communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

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- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's

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demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Guidance information for assessment

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- MSDS
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements pertaining to the installation of mains pipe systems
- relevant Australian standards
- safe work procedures or equivalent relating to the installation of mains pipe systems
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

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Work health and safety is to be according to commonwealth, state and territory legislation and regulations, organisational safety policies and procedures, and project safety plan, and may include:

- emergency procedures, which are to include:
  - emergency shutdown and stopping
  - extinguishing equipment for fires
  - organisational first aid requirements, including use of first aid equipment
  - evacuation
- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards and risks associated with:
  - buildings
  - cuttings
  - electricity
  - embankments
  - excavations
  - hazardous materials and substances
  - other machines
  - personnel
  - restricted access barriers
  - structures
  - traffic control
  - trees
  - underground services
  - uneven and unstable terrain
  - work site visitors and the public
  - working in proximity to others
- safe parking practices, including ensuring:
  - access ways are clear
  - equipment and machinery are:
    - away from overhangs and refuelling sites
    - safe distance from excavations
    - secured from unauthorised access or movement
- use of tools and equipment
- workplace environment and safety.

Signage may include:

- barricades

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- highway traffic signs
- signage for traffic control escort vehicles
- site safety signage
- temporary signage for benefit of motorists and pedestrians
- traffic conditions signage.

Traffic conditions may include:

- buildings
- congested urban environments
- low traffic rural areas
- off-road un-trafficked areas
- parking sites
- pedestrian areas.

Tools and equipment may include:

- crow bars
- grinders
- hammers
- jointing equipment
- levelling equipment
- lifting equipment
- oxy-acetylene equipment
- saws
- scaffolding
- shovels.

Environmental requirements are to include:

- clean-up management
- dust and noise
- organisational and project environmental management plan
- vibration
- waste management
- water quality protection.

Materials may include:

- backfill and bedding materials
- concrete
- pipes
- other approved materials.

Statutory and regulatory

- commonwealth, state or territory, and local

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authorities include:	authorities administering applicable Acts, regulations and codes of practice.

Mains pipe systems:	• may include:
	  • in-ground or above ground
	  • pressurised mains water pipelines (booster system)
	• may be constructed from:
	  • ductile iron cement lined (DICL)
	  • polymer
	  • steel and copper
	  • other approved materials.

Pipe joining methods may include:	• arc welded and mechanical jointed • rubber ring • solvent welded • other approved jointing methods.
Valves and flow control devices include:	• air release valves • energy dissipaters • flow control valves • non-return valves • pressure control valves • stop valves.

Installation procedures:	• are to include:
	  • bedding down pipes
	  • checking alignment, level and grade
	  • positioning pipes
	  • selecting size, type and material of pipe
	• may include:
	  • repair work
	  • bedding materials, including aggregate and sand
	  • support systems, which may include:
	  • bedding for in-ground trenches
	  • concrete shoulders for above ground pipes.

Sustainability principles and	• cover the current and future social, economic and

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concepts: environmental use of resources

- may include:
  - selecting appropriate material to ensure minimal environmental impact
  - efficient use and recycling of material
  - efficient energy and water use
  - disposing of waste material to ensure minimal environmental impact.

Testing procedures may include:

- air
- ovality
- pressure
- tolerance
- visual straightness
- water.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPWT3030A Install home fire sprinkler systems

Modification History

Version	Comments
1	This version first released with CPC08 Construction, Plumbing and Services Training Package Version 8.

Unit Descriptor

This unit of competency specifies the outcomes required to install a home fire sprinkler system in a class 1a building.

Application of the Unit

Site location for work application is a class 1a building and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	**Prepare for work.**	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with a home fire sprinkler system in a class 1a building are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work.
		1.5	***Tools and equipment*** for installing a home fire sprinkler in a class 1a building, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient installation of a home fire sprinkler system for a class 1a building.
2	**Identify installation requirements.**	2.1	System requirements are identified from plans, specifications and standards.
		2.2	***Materials*** are selected that comply with ***relevant Australian standards***.
		2.3	Quantities of materials required are calculated from plans and specifications.
		2.4	Materials and equipment are identified, ordered and collected according to workplace procedures.
		2.5	Materials and equipment are checked for compliance

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			with standards, docket and order form, and for acceptable condition.
		2.6	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
3	**Install and test system components.**	3.1	System is set out according to plans, specifications and job instructions relevant Australian standards.
		3.2	Pipe supports are installed that comply with standards, plans and specifications.
		3.3	Fixings are installed to plans, specifications and manufacturer specifications.
		3.4	Assemblies, devices, alarms, piping and materials are installed according to Australian standards, plans and specifications.
		3.5	Jointing systems are installed in compliance with Australian standards and manufacturer specifications.
		3.6	Installed system is subjected to pressure testing according to Australian standards, plans and specifications.
		3.7	Test data is recorded in format required by plans, specifications and quality assurance procedures.
4	**Clean up.**	4.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		4.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		4.3	***Information*** is accessed and documentation completed according to regulatory authorities and workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow and give instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
- literacy skills to:
  - complete workplace documentation
  - identify and accurately report faults in tools, equipment or materials
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - record test results in writing
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to install and test a home fire sprinkler system for a class 1a building, including piping, control valve assemblies, actuating devices, alarms and sprinkler heads
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- components and materials relevant to installing a home fire sprinkler system for a class 1a building
- fire rating systems and procedures
- function and operation of a range of alarms, actuating devices, sprinkler heads and valves

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- job safety analyses (JSA) and safe work method statements (SWMS)
- National Fire Protection Association (NFPA) and Factory Mutual performance-based codes of practice
- pressure test systems and procedures
- processes for accessing information and calculating material requirements
- process of installing a home fire sprinkler system for a class 1a building
- relevant statutory requirements related to installing a home fire sprinkler system for a class 1a building
- SI system of measurement
- structural systems, building materials and building services
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to install and test a home fire sprinkler system for a class 1a building
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications of a home fire sprinkler system for a single storey class 1a building, installing and testing a home fire sprinkler system, consisting of a water supply, piping, control valves, actuating devices, alarms and sprinkler heads to design criteria and standards, ensuring:
  - application of sustainability principles and concepts throughout the installation process
  - correct identification of location, design and details of proposed installation
  - correct selection and use of appropriate processes, tools and equipment
  - completion of all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

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Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Integrated Framework Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and

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supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity
  - hazardous materials and substances
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of tools and equipment
  - work site visitors and the public
  - working at heights
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements:

- cover water quality management
- may include:
  - clean-up protection
  - waste management.

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Quality assurance requirements may include:

- Australian standards
- environment policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk-management strategies
- International Standards Organisation
- project specifications
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:

- cutting and threading equipment
- elevated work platforms
- hand and power tools
- ladders
- silver brazing equipment
- testing equipment
- welding equipment.

Materials may include:

- actuating devices
- control valve assemblies
- local alarms
- approved piping and fittings
- sprinkler heads.

Relevant Australian standards include:

- AS2118.5 Automatic fire sprinkler systems (Part 5: Domestic)
- AS/NZS3500 National plumbing and drainage.

Sustainability principles and concepts:

- cover the social, economic and environmental use of resources to meet current and future needs
- may include:
  - disposing of waste material
  - efficient energy usage
  - efficient use and recycling of material
  - selecting appropriate materials
  - water use, harvesting and/or disposal.

Information may

- charts and hand drawings

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include:

- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- NFPA and Factory Mutual performance-based codes of practice
- organisational work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those relating to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards
- safe work procedures relating to installing home fire sprinkler systems for a class 1a building
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Competency field Water

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPWT4011B Design and size heated and cold water services and systems

Modification History

Minor changes throughout the unit
Equivalent to CPCPWT4011A

Unit Descriptor

This unit of competency specifies the outcomes required to design, size and document the layout of heated, tempered and cold water services, flushing systems, and hydrant and hose reel systems for multi-floor buildings.
It covers preparation for work, identification of water service and system requirements, planning the service and system layout and completion of work finalisation processes.

Application of the Unit

Site location for work application will be residential and commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	**Prepare for planning.**	1.1	Nature and scope of planning task are identified and confirmed.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with planning, sizing and documenting the layout of heated, tempered and cold water services and systems are adhered to throughout the work.
		1.3	Work is organised and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.4	***Tools and equipment*** required for planning, sizing and documenting the layout of heated, tempered and cold water services and systems, including personal protective equipment, are selected and checked for serviceability.
		1.5	Work area in which planning process is to be conducted is prepared.
2	**Identify system requirements.**	2.1	Information and specifications for required work are obtained and confirmed, if necessary by site inspection using relevant ***information***.
		2.2	Regulations and Australian standards relevant to the work are consulted and applied to all aspects of the work.
		2.3	Quantity, location and type of take-off points and fixtures are determined from plans and specifications.

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		2.4	Heated, tempered and cold ***water services and systems*** are sized according to relevant Australian standards and regulatory authorities' and workplace requirements.
3	**Plan service and system layout.**	3.1	Layout of heated, tempered and cold water services and systems to ***point of discharge*** are planned according to building plans, relevant Australian standards and workplace procedures.
		3.2	***Materials*** required are specified and optimised according to relevant Australian standards from the proposed design.
		3.3	Plans are recorded according to regulatory authorities' and workplace requirements.
		3.4	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
4	**Restore work area.**	4.1	Work area is restored according to workplace procedures.
		4.2	Tools and equipment used in the process are refurbished and left according to workplace procedures.
		4.3	Documentation, including work backup, is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation, including work backup
  - read and interpret:
    - documentation from a variety of sources
    - regulations, relevant Australian standards, plans, specifications and drawings
  - record written plans
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to identify requirements, including system requirements
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- characteristics and application of different pipes and fittings, including fixing and joining techniques and methods
- characteristics and application of water heating systems
- characteristics and application of water pumps and water storage tanks for multiple floor buildings
- drafting techniques, which may include the use of computers and computer-aided design

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(CAD) software
- job safety analysis (JSA) and safe work method statements (SWMS)
- levelling and alignment processes
- process of designing, sizing and documenting the layout of heated, tempered and cold water services and systems
- processes for accessing information and for calculating material requirements
- properties of water, including pressure and flow rates
- relevant statutory requirements related to designing, sizing and laying out:
  - heated, tempered and cold water services and flushing systems, and fire hydrant and hose reel systems, including non-drinking water requirements
  - both mains pressure and low pressure flushing devices
- selection for installation of:
  - thermostatic mixing valves
  - backflow prevention devices
- SI system of measurements
- Australian standards applicable to the service and system
- water treatment processes
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, Australian standards and specifications to the design, sizing and layout of heated, tempered and cold water services and systems
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- as a minimum, the ability to design, size and document the layout of:
  - a water supply system for a building with a minimum of six floors (including a non-drinking supply)
  - a flush valve system for a multi-floor complex, for a building that is a minimum of 35 metres high
  - a heated/tempered water supply system for a building
  - a hydrant and hose reel system for a building with a minimum of six floors; ensuring:
    - application of sustainability principles and concepts
    - correct identification of location, design and details of proposed services and systems
    - correct selection and use of appropriate processes, tools and equipment
    - completion of all work to specification
    - compliance with regulations, relevant Australian standards and organisational

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quality procedures and processes
- communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles

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- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising

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and preventing hazards associated with:
  - electricity
  - hazardous materials and substances
  - other machines
  - surrounding structure and facilities
  - trip hazards
  - underground services
  - use of tools and equipment
  - work site visitors and the public
  - working at heights
  - working in confined spaces
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- computers running appropriate CAD software
- drawing instruments
- measuring equipment.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes

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- WHS and environmental requirements
- plumbing regulations
- relevant Australian standards, including AS/NZS3500 National plumbing and drainage
- safe work procedures relating to designing, sizing and documenting the layout of heated and cold water services and systems
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Water services and systems include:

- drinking water from a water meter or storage tank to a point of discharge or storage
- fire hydrant and hose reel systems
- heated and tempered water service to a point of discharge
- flushing systems
- non-drinking water from a source to a point of discharge or storage.

Point of discharge may be:

- fixture
- isolating valve.

Materials may include:

- building plans
- job specifications
- manufacturer specifications.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient design principles to minimise environmental impact
  - efficient use of material in the design, including recycling of material
  - efficient energy and water use
  - disposing of waste material to ensure minimal environmental impact.

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Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPWT4022A Commission and maintain backflow prevention devices

Modification History

Changes to performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPWT4012A

Unit Descriptor

This unit of competency specifies the outcomes required to test, commission and maintain backflow prevention devices in water services.
It covers preparation for work, identification of testing and commissioning requirements, physical testing and commissioning of devices, maintenance of devices and completion of work finalisation processes.

Application of the Unit

Site location for work application will be either residential or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	**Prepare for work.**	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with testing, commissioning and maintaining backflow prevention devices are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment*** for testing, commissioning and maintaining backflow prevention devices, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient testing, commissioning and maintenance of ***backflow prevention devices***.
2	**Identify testing and commissioning requirements.**	2.1	Service and system design, and testing and commissioning requirements, are identified and confirmed from job specifications and according to standards and relevant ***information***.
		2.2	Backflow prevention device specifications and necessary installation ***materials*** are identified according to standards, authorities' requirements and job specifications.

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		2.3	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
3	**Test and commission device.**	3.1	Installation is checked to ensure device is appropriate and installed according to standards, job specifications, manufacturer recommendations and authorities' requirements.
		3.2	Operation of device is tested according to job specifications, manufacturer recommendations and authorities' requirements, and adjusted as required.
		3.3	Documentation is completed according to regulating authorities' requirements.
4	**Maintain device.**	4.1	Service and maintenance requirements are identified from manufacturer specifications or authorities' requirements.
		4.2	Replacement components are checked and fitted periodically and as required according to specification.
		4.3	Maintenance and repair of devices are conducted observing manufacturer and authorities' requirements.
5	**Restore work area.**	5.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		5.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		5.3	Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and accurately report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to test, commission and maintain high, medium and low hazard backflow prevention devices in water services
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- basic hydraulics and mechanics relevant to backflow prevention devices in water services
- characteristics and applications of the materials and backflow prevention devices
- effective isolation procedures

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- job safety analysis (JSA) and safe work method statements (SWMS)
- process of testing, commissioning and maintaining backflow prevention devices
- processes for accessing information and for calculating material requirements
- properties of water, including pressure and flow rates
- relationship with other service controls and devices
- relevant statutory requirements related to testing and commissioning backflow prevention devices
- SI system of measurements
- standards applicable to the service
- testing equipment and techniques
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to the commissioning of backflow prevention devices
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- as a minimum, the ability to test and commission at least:
  - two different double check valves
  - a single (testable) check valve
  - two different registered air gaps (including two different orifice sizes and inlet pressures)
  - two different types of pressure type vacuum breakers
  - two different reduced pressure zone devices, indicating the ongoing maintenance requirements for each of them, ensuring:
    - application of sustainability principles and concepts
    - correct identification of location, design and details of proposed service
    - correct selection and use of appropriate processes, tools and equipment
    - completion of all work to specification
    - compliance with regulations, standards and organisational quality procedures and processes
    - communicating and working effectively and

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safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and

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environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- identifying and testing for electrical hazards
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - electricity

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- hazardous materials and substances
- service lines
- surrounding structures and facilities
- trip hazards
- use of tools and equipment
- work site visitors and the public
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

Quality assurance requirements may include:

- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- hand and power tools
- approved and calibrated test equipment.

Backflow prevention devices may include:

- single check valves
- double check valves
- pressure type vacuum breakers
- reduced pressure zone devices
- registered air gaps (RAG)
- registered break tanks (RBT).

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or

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external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards, including:
  - AS/NZS3500 National plumbing and drainage
  - AS/NZS2845.1:2010 – Water Supply – Backflow prevention devices
- safe work procedures relating to commissioning backflow prevention devices
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Materials may include:

- approved backflow prevention devices.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient use of material
  - efficient water use
  - efficient energy retention
  - selecting appropriate components and material to ensure minimal environmental impact.

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Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCPWT4023A Commission and maintain hot and heated water temperature control devices

Modification History

Changes to unit title, descriptor, performance criteria, required skills and knowledge, range statement and critical aspects
Not equivalent to CPCPWT4013A

Unit Descriptor

This unit of competency specifies the outcomes required to test, commission and maintain hot and/or heated water temperature control devices, including thermostatic mixing valves in water services.
It covers preparation for work, identification of testing and commissioning requirements, physical testing and commissioning of devices, maintenance of devices and completion of work finalisation processes.

Application of the Unit

Site location for work application will be residential or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	**Prepare for work.**	1.1	Plans and specifications are obtained.
		1.2	***Work health and safety*** (WHS) and ***environmental requirements*** associated with testing, commissioning and maintaining hot and/or heated water temperature control devices are adhered to throughout the work.
		1.3	***Quality assurance requirements*** are identified and adhered to according to workplace requirements.
		1.4	Tasks are planned and sequenced in conjunction with others involved in or affected by the work and ***statutory and regulatory authorities'*** requirements.
		1.5	***Tools and equipment*** for testing, commissioning and maintaining hot and/or heated water temperature control device, including personal protective equipment, are selected and checked for serviceability.
		1.6	Work area is prepared to support efficient commissioning of hot and/or heated water temperature control devices.
2	**Identify testing and commissioning requirements.**	2.1	Service and system testing and commissioning requirements are identified from job specifications and according to standards, using relevant ***information***.
		2.2	Hot and/or heated water temperature control device specifications and necessary ***materials*** are identified according to standards, authorities' requirements and job specifications.

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3	**Test and commission device.**	3.1	Service and system are checked to ensure device is appropriate and installed according to standards, job specifications, manufacturer recommendations and authorities' requirements.
		3.2	Operation of device is tested for correct flow rate, operation and compliance with specifications, manufacturer recommendations and authorities' requirements, and adjusted as required.
		3.3	Documentation is completed according to regulating authorities' requirements.
		3.4	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
4	**Maintain device.**	4.1	Maintenance requirements are identified from manufacturer specifications or authorities' requirements.
		4.2	Replacement components are checked and fitted periodically and as required according to specification.
		4.3	Maintenance of valves is conducted observing manufacturer and authorities' requirements.
5	**Restore work area.**	5.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
		5.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
		5.3	Documentation is completed according to workplace requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to test, commission and maintain hot and/or heated water temperature control devices, including thermostatic mixing valves, in hot and/or heated water systems and appliances requiring temperature control
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- bacteria in water and its effect on health
- basic hydraulics and mechanics relevant to water temperature control devices and their installation

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- characteristics and applications of different types of hot and/or heated water temperature control valves and devices
- characteristics of materials
- effective isolation procedures
- job safety analysis (JSA) and safe work method statements (SWMS)
- process of commissioning hot and/or heated water temperature control devices
- processes for accessing information and for calculating material requirements
- properties of water, including pressure and flow rates
- relevant statutory requirements related to commissioning hot and/or heated water temperature control devices
- SI system of measurements
- standards applicable to the service
- testing techniques
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to commission hot and/or heated water temperature devices
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- as a minimum, the ability to test, commission and maintain three different types of thermostatic mixing valve, ensuring:
  - application of sustainability principles and concepts
  - correct identification of location, design and details of proposed service
  - correct selection of valve for given application
  - completion of all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - application of sustainability principles and concepts
  - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will

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usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a

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number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- identifying and testing for electrical hazards
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
  - hazardous materials and substances
  - service lines
  - surrounding structures and facilities
  - trip hazards
  - use of tools and equipment
  - work site visitors and the public
  - working in proximity to others
- use of firefighting equipment

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- use of first aid equipment
- workplace environment and safety.

Environmental requirements cover water quality management and may include:

- clean-up protection
- waste management.

Quality assurance requirements may include:

- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- hand and power tools
- test equipment.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
  - building codes
  - WHS and environmental requirements
  - plumbing regulations
- relevant Australian standards, including AS/NZS3500 National plumbing and drainage
- safe work procedures relating to commissioning hot and/or heated water temperature control devices
- signage
- verbal, written and graphical instructions

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- work bulletins
- work schedules, plans and specifications.

Materials must include:

- hot and/or heated water temperature control devices, including thermostatic mixing valves.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient use of material
  - efficient water use
  - selecting appropriate components to ensure minimal environmental impact.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPCSFS5001A Define scope and hazard level of fire systems design projects

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency specifies the outcomes required to interpret briefs and specifications for fire systems design projects, and define the scope and hazard level of the project with reference to relevant legislation, codes and standards. Licensing, legislative, regulatory or certification requirements may apply to this unit and so the varying state or territory requirements should be confirmed with the relevant body.

Application of the Unit

Application of the unit	This unit of competency supports the role of fire systems' designers who need to determine the nature and purpose of the client's or fire engineer's fire systems design concept. The work involves establishing the building classification and hazard level and the legislation, codes and standards that must be applied to the detailed design for fire systems. Fire systems designs are limited to those within the deemed-to-satisfy provisions of the Building Code of Australia or detailed fire systems designs for alternative solutions designed by fire engineers. This unit does not apply to fire systems for special hazard locations.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units	Nil

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Interpret fire systems design concepts, briefs or specifications.	1.1. Design concepts and recommendations for ***fire systems design projects*** are gathered and interpreted within project timelines. 1.2. Design briefs and specifications for fire systems design projects are gathered and interpreted within project timelines. 1.3. The nature, purpose and location of proposed fire systems are determined and outlined.
2. Establish building classifications and hazard levels for fire systems design projects.	2.1. Sizes and types of buildings are determined from initial project documentation. 2.2. Functions and occupancies of buildings are determined from initial project documentation. 2.3. Clarification of specific building details is sought from the client or relevant contractors and consultants within project timelines. 2.4. ***Building classifications*** and hazard levels are researched and confirmed according to relevant ***codes and standards***.
3. Determine the applicable legislation, codes and standards.	3.1. The ***regulatory requirements*** applicable to each location of fire systems design projects are determined and confirmed as correct. 3.2. The codes and standards applicable to the locations and classifications of buildings included in fire systems design projects are determined and confirmed as correct. 3.3. The insurance requirements impacting on applicable codes and standards for fire systems projects are determined and confirmed as correct.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• operating computer software packages and systems, including: • word processing

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REQUIRED SKILLS AND KNOWLEDGE
• spreadsheet • email • internet • proprietary project management software • parametric modelling of services coordination using proprietary software, such as Navis-Works or MEP-REVIT • language and literacy skills for: • listening to and communicating clearly with clients and contractors • participating in meetings, such as negotiations with fire engineering consultant, architect or builder • researching current relevant legislation, codes and standards • reading and interpreting drawings, including architectural and structural • developing constructive and cooperative working relationships with project team members, workplace colleagues and clients • initiating and running meetings with lead contractor and other service contractors • project management • organising own work, including creating personal systems and checklists for planning, managing and checking work • lateral thinking and problem solving • maintaining concentration, focus and attention to detail for long periods • managing detailed input to concurrent fire systems design projects at different stages of the process and with diverse sets of regulatory requirements
Required knowledge
• fire science, including: • fire behaviour and dynamics • impact of fire on structures and materials • products of combustion • fire control strategies • fire retardants • fire detection technologies • fire suppression technologies • fire containment • human psychology, especially fire avoidance behaviour • fire engineering principles, including: • engineered solutions • innovative fire systems • fire modelling • computer software functions and operation, including:

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REQUIRED SKILLS AND KNOWLEDGE
• word processing • spreadsheet • email • internet • proprietary project management software • parametric modelling software, such as Navis-Works or MEP-REVIT • relevant current legislation, codes and standards, including: • building Acts • building regulations • infrastructure supply regulations • the Building Code of Australia • Australian standards for fire systems • international standards for fire systems • other fire systems standards commonly required by building insurers • fire systems' technology and components, including: • water-based systems, including: • wet pipe sprinkler systems • deluge and drencher systems • dry pipe sprinkler systems • pre-action sprinkler systems • early suppression fast response (ESFR) • hydrants, hose reels and monitors • water supply tanks • fire pump sets • detection and warning systems, including: • emergency warning and intercommunications systems (EWIS) • fire detection and alarm systems • smoke control systems • emergency lighting systems • purpose and operation of fire systems, including: • layout • system operation • performance requirements • maintenance standards • system activation and operation • passive fire safety elements: • identification of passive elements • impact of fire systems design on passive elements

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REQUIRED SKILLS AND KNOWLEDGE
◦ specifications required to safeguard integrity of passive fire element performance where penetrations are necessitated by the fire systems design • characteristics and limitations of products and materials used in fire systems and issues relating to material compatibility • interconnection of fire systems, including: ◦ cause and effect matrix ◦ interface with other services • basic principles of structural engineering • characteristics of building materials • construction industry terminology

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that the simulated or project-based assessment fully replicates workplace conditions, materials, activities, responsibilities and procedures. This unit could be assessed as an activity involving the determination and establishment of the scope of a range of fire systems design projects. This would involve correctly interpreting design concepts, briefs and specifications, establishing building classifications, and identifying the relevant applicable legislation, codes and standards.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the required skills and knowledge specified within this unit.
	
	In particular the person should demonstrate:
	• the ability to read and interpret a range of design documents, including concept briefs, design briefs, drawings, plans and specifications
	• an understanding of hazard levels and building classifications
	• an understanding of the extent of legislation, codes, standards, as well as regulatory and insurance requirements, that may apply to fire systems design projects of different types and in different locations, including:
	  • low-rise buildings
	  • medium-rise buildings
	  • high-rise buildings (over 25 metres)
	  • buildings over 45 metres in height
	• the ability to conduct research to determine which particular legislation, codes, standards, regulatory and insurance requirements apply to

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EVIDENCE GUIDE	
	specific fire systems designs in different types of buildings and locations, including: • low-rise buildings • medium-rise buildings • high-rise buildings (over 25 metres) • buildings over 45 metres in height.
Context of and specific resources for assessment	Assessment of essential underpinning knowledge may be conducted in an off-site context. It is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • design briefs, drawings, plans and specifications • copies of codes, standards, legislation and regulatory requirements • access to information and communications technology - hardware and software.
Method of assessment	Assessment must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments.
Guidance information for assessment	Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in

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EVIDENCE GUIDE	
	relation to the competency being assessed.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Fire systems design projects may include:	• different types of buildings, including:
	  • residential
	  • commercial
	  • industrial
	  • mixed classification
	• projects in different locations, including:
	  • local
	  • involving more than one state or territory
	  • international
	• several types of fire systems, including:
	  • water-based systems:
	  • wet pipe sprinkler systems
	  • deluge and drencher systems
	  • dry pipe sprinkler systems
	  • pre-action sprinkler systems
	  • early suppression fast response (ESFR)
	  • hydrants, hose reels and monitors
	  • water supply tanks
	  • fire pump sets
	  • detection and warning systems:
	  • emergency warning and intercommunications systems (EWIS)
	  • fire detection and alarm systems
	  • smoke control systems

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RANGE STATEMENT	
	• emergency lighting systems.

Building classifications may include:	• classifications in the Building Code of Australia:
	  • occupancy classes
	  • multiple classifications
	  • parts with more than one classification
	  • fire hazard properties of materials and smoke growth rate
	• classifications specified in relevant Australian or international standards
	• classifications relating to standards or codes applied by building insurers.

Codes and standards may include:	• the Building Code of Australia • Australian standards for fire systems • international standards for fire systems.

Regulatory requirements may include:	• relevant current legislation, including:
	  • building Acts
	  • building regulations
	  • infrastructure supply regulations
	• relevant state, territory and local legislation.

Unit Sector(s)

Unit sector	Fire systems design

Co-requisite units

Co-requisite units	Nil

Competency field

Competency field	

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CPCSFS5002A Research and interpret detailed fire systems design project requirements

Modification History

Not Applicable

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Unit Descriptor

Unit descriptor	This unit of competency specifies the outcomes required to obtain and process design drawings and documentation required for the preparation of detailed fire systems designs and make an initial assessment of the how fire systems are affected by other aspects of the project. The unit also covers researching detailed fire systems' compliance requirements and regulatory processes and negotiating solutions to conflicts arising between the design brief and compliance or installation requirements. Licensing, legislative, regulatory or certification requirements may apply to this unit and so the varying state or territory requirements should be confirmed with the relevant body.

Application of the Unit

Application of the unit	This unit of competency supports the role of fire systems' designers who need to gather and process fire systems design project drawings and documentation and establish the detailed design and compliance requirements for fire systems. The role also involves assessing the impact of building construction and services installation on the detailed fire systems design and negotiating solutions to any conflicts arising. Fire systems designs are limited to those within the deemed-to-satisfy provisions of the Building Code of Australia or detailed fire systems designs for alternative solutions designed by fire engineers. This unit does not apply to fire systems for special hazard locations.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units	Nil

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Gather and interpret project initiation documentation.	1.1. ***Fire systems*** design briefs, plans and specifications are gathered and checked for currency and completeness. 1.2. The specific requirements of ***engineered or innovative solutions***, designed and specified by fire engineers, are interpreted. 1.3. ***Relevant drawings***, ***plans and schedules for the building project*** are requested, obtained and filed according to workplace and project procedures. 1.4. Impacts of building construction and the installation of other services on fire systems design are assessed to pre-empt possible issues.
2. Research the detailed requirements of relevant legislation and regulatory processes.	2.1. ***Legislation*** impacting on design compliance in different project locations is investigated and variations in requirements are interpreted and noted. 2.2. ***Regulatory requirements*** impacting on fire systems designs and project processes in different locations are investigated and specific requirements are interpreted and noted.
3. Research the detailed requirements of applicable codes and standards.	3.1. Applicable ***codes and standards*** are gathered and checked for currency. 3.2. Requirements relating to specific fire systems in different ***types of buildings and situations*** are researched and interpreted. 3.3. In situations where more than one code or standard is applicable, the most rigorous requirements are determined and applied.
4. Consult and negotiate to clarify and finalise project details.	4.1. The interpretation of the required fire systems design and intended layout and interconnection are confirmed with relevant personnel. 4.2. Consultation and negotiations are undertaken with relevant personnel to resolve conflicts between the design brief and regulatory or insurance requirements. 4.3. Consultation and negotiations are undertaken with relevant personnel to resolve conflicts between the design brief, the requirements of building construction, and the installation of the fire systems and other services. 4.4. Aesthetic requirements relating to the location of fire system components and installation methods are

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ELEMENT	PERFORMANCE CRITERIA
	clarified and solutions negotiated.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills

- accurate measuring
- accurate naming and filing of drawings, including:
  - formal document control
  - formal amendments, including:
  - history
  - transmittal notices
- editing and creating drawings, including:
  - layout
  - section
  - detail
  - external references
  - freezing layers
- operating computer software packages and systems, including:
  - word processing
  - spreadsheet
  - email
  - internet
  - proprietary project management software
  - parametric modelling of services coordination using proprietary software, such as Navis-Works or MEP-REVIT
- numeracy skills for calculating dimensions
- language and literacy skills for:
  - listening to and communicating clearly with colleagues and contractors
  - participating in meetings, such as negotiations with fire engineering consultant, architect, builder or other service contractors
  - researching, accessing, reading, interpreting and applying current relevant legislation, codes and standards
  - letter writing, especially to formalise:

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REQUIRED SKILLS AND KNOWLEDGE
• recognition of conflicts and errors on drawings supplied by other service contractors • agreements with other services, for example whichever service is fitted last must fit around existing services • updating knowledge of products, software systems and technology • reading and interpreting drawings, plans and specifications, including: • architectural • structural • mechanical • hydraulic • electrical • researching and evaluating competing technologies in new products and systems • developing constructive and cooperative working relationships with project team members, workplace colleagues and clients • negotiation and conflict management • initiating and running meetings with lead contractor and other service contractors • project management • organising own work, including creating personal systems and checklists for planning, managing and checking work • lateral thinking and problem solving • maintaining concentration, focus and attention to detail for long periods
Required knowledge
• workplace design tools and processes • level of accuracy required in detailed design drawings • naming conventions for design drawings and drawing register • fire science, including: • fire behaviour and dynamics • impact of fire on structures and materials • products of combustion • fire control strategies • fire retardants • fire detection technologies • fire suppression technologies • fire containment • fire engineering principles, including: • engineered solutions • innovative fire systems • fire modelling

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REQUIRED SKILLS AND KNOWLEDGE

• parametric modelling software, such as Navis-Works or MEP-REVIT
• computer software functions and operation, including:
  • word processing
  • spreadsheet
  • email
  • internet
  • proprietary project management software
• relevant current legislation, codes and standards, including:
  • building Acts
  • building regulations
  • infrastructure supply regulations
  • the Building Code of Australia
  • Australian standards for fire systems
  • international standards for fire systems
  • other fire system standards commonly required by building insurers
• regulatory requirements, systems and processes
• protection requirements for different buildings
• fire systems' technology and components, including:
  • water-based systems, including:
  • wet pipe sprinkler systems
  • deluge and drencher systems
  • dry pipe sprinkler systems
  • pre-action sprinkler systems
  • early suppression fast response (ESFR)
  • hydrants, hose reels and monitors
  • water supply tanks
  • fire pump sets
  • detection and warning systems, including:
  • emergency warning and intercommunications systems (EWIS)
  • fire detection and alarm systems
  • smoke control systems
  • emergency lighting systems
• purpose and operation of fire systems, including:
  • layout
  • system operation
  • performance requirements
  • maintenance standards
  • system activation and operation

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REQUIRED SKILLS AND KNOWLEDGE

• passive fire safety elements:
  • identification of passive elements
  • impact of fire systems design on passive elements
  • specifications required to safeguard integrity of passive fire element performance where penetrations are necessitated by the fire systems design
• characteristics and limitations of products and materials used in fire systems and issues relating to material compatibility
• interconnection of fire systems, including:
  • cause and effect matrix
  • interface with other services
• basic principles of structural engineering
• characteristics of building materials
• construction industry terminology
• roles and responsibilities of relevant building project personnel, including:
  • architect
  • lead contractor
  • mechanical engineer
  • hydraulic engineer
  • electrical engineer
• on-site issues that can arise during the construction phase and impose changes to the designs of fire systems and other services
• installation methods, including:
  • access requirements
  • health and safety requirements
• fluid mechanics and hydraulics relating to:
  • water supply
  • pressure
  • pump selection
  • tank selection
  • pressure vessels
  • pipe range
• sustainability requirements and ratings, including:
  • energy conservation
  • water conservation

Evidence Guide

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EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that the simulated or project-based assessment fully replicates workplace conditions, materials, activities, responsibilities and procedures. This unit could be assessed as an activity involving the establishment of the detailed design requirements of a range of fire systems design projects, including discretionary client requirements. The activity should also include researching and interpreting the specifics of applicable legislation, regulatory processes and relevant codes and standards for a range of types of buildings in different project locations.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the required skills and knowledge specified within this unit.
	
	In particular the person should demonstrate:
	
	• an ability to interpret the detailed requirements of fire systems design specifications
	• an understanding of the extent of compliance requirements and procedures to which fire systems design projects are subject, for a range of projects, including:
	  • low-rise buildings
	  • medium-rise buildings
	  • high-rise buildings (over 25 metres)
	  • buildings over 45 metres in height
	• the ability to discern mandatory and discretionary requirements and to research the detailed compliance requirements for a range of fire systems design projects in different locations
	• the ability to gather, research and interpret information that may differ in only the slightest of details from one design or location to

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EVIDENCE GUIDE	

	another
	• the ability to present research findings to relevant stakeholders and conduct negotiations regarding detailed design changes imposed by:
	  • compliance requirements
	  • detailed designs of other services
	  • aesthetic requirements.

Context of and specific resources for assessment	Assessment of essential underpinning knowledge may be conducted in an off-site context. It is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • design briefs, drawings, plans and specifications • copies of codes, standards, legislation and regulatory requirements • access to information and communications technology hardware and software.
Method of assessment	Assessment must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments.
Guidance information for assessment	Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in

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EVIDENCE GUIDE	
	relation to the competency being assessed.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Fire systems may include:	• water-based systems, including:
	  • wet pipe sprinkler systems
	  • deluge and drencher systems
	  • dry pipe sprinkler systems
	  • pre-action sprinkler systems
	  • early suppression fast response (ESFR)
	  • hydrants, hose reels and monitors
	• detection and warning systems, including:
	  • emergency warning and intercommunications systems (EWIS)
	  • fire detection and alarm systems
	  • smoke control systems
	  • emergency lighting systems.

Engineered or innovative solutions may include those defined in the Building Code of Australia as:	• 'solutions which comply with the Performance Requirements other than by reason of satisfying the Deemed-to-Satisfy Provisions'.

Relevant drawings, plans and schedules for the building project may include:	• drawings, including:
	  • architectural
	  • structural
	  • mechanical
	  • hydraulic
	  • electrical
	  • layout
	  • section

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RANGE STATEMENT	
	• detail • external references • project plan • project schedule • design brief • design specifications.
Legislation may include:	• international, state and territory, or local legislation relevant to various sites of major fire systems design projects and impacting on detailed designs for specific locations.
Regulatory requirements may include:	• mandatory requirements • design approval • fire brigade requirements • certification of installation • infrastructure supply regulations.
Codes and standards may include:	• the Building Code of Australia • the Plumbing Code of Australia • Australian standards for fire systems • international standards for fire systems • other fire system standards commonly required by building insurers.

Types of buildings and situations may include:	• different types of buildings, including:
	  • residential
	  • commercial
	  • industrial
	  • mixed classification
	• buildings in different locations, including:
	  • local
	  • involving more than one state or territory
	  • international
	• classifications of buildings in the Building Code of Australia:
	  • occupancy classes
	  • multiple classifications
	  • parts with more than one classification
	  • fire hazard properties of materials and smoke growth rate
	• classifications of buildings specified in relevant Australian or international standards

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RANGE STATEMENT	
	• classifications of buildings relating to standards or codes applied by building insurers.

Unit Sector(s)

Unit sector	Fire systems design

Co-requisite units

Co-requisite units	Nil

Competency field

Competency field	

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CPCSFS5003A Develop plans and methodology for fire systems design projects

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency specifies the outcomes required to ensure a quality result for the detailed design of fire systems through meticulous work organisation, planning and methodology. Licensing, legislative, regulatory or certification requirements may apply to this unit and so the varying state or territory requirements should be confirmed with the relevant body.

Application of the Unit

Application of the unit	This unit of competency supports the role of fire systems' designers who manage their own work and take responsibility for ensuring that detailed designs of fire systems are produced within required timeframes and to the standards required for approval of such designs. Fire systems designs are limited to those within the deemed-to-satisfy provisions of the Building Code of Australia or detailed fire systems designs for alternative solutions designed by fire engineers. This unit does not apply to fire systems for special hazard locations.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units	Nil

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish relevant project management details.	1.1. ***Project management roles***, responsibilities and lines of communication for ***fire systems*** design projects are identified and agreed with project team members in line with project timelines. 1.2. Relevant project scheduling and sequencing information is identified and confirmed. 1.3. Project file-sharing and communication systems and tools are identified and any necessary familiarisation activities are undertaken to ensure efficient and effective operation.
2. Establish procedures for initiating fire systems design projects.	2.1. Project and file-naming systems are established according to workplace and project requirements. 2.2. Efficient and effective document filing and storage systems are established according to workplace and project requirements. 2.3. Systems for efficient tracking and filing of project communications are established according to workplace and project requirements. 2.4. A system is established for ensuring that relevant ***project documentation*** is requested, received, named and filed according to workplace procedures.
3. Develop a plan for setting up fire systems design projects.	3.1. Procedures for setting up correct CAD backgrounds are established according to workplace and project requirements. 3.2. Systematic processes for identifying and importing the correct layer drawings into CAD are established according to workplace and project requirements. 3.3. Systematic processes for naming, notating and filing drawings are established according to workplace and project requirements.
4. Develop a plan and methodology for designing fire systems.	4.1. Steps and timeframes in the design process for fire systems are established according to workplace and project requirements. 4.2. Workplace quality assurance checks to ensure accuracy and validity of design are determined and procedures are established to ensure that these are conducted. 4.3. Stages where ***regulatory or other approval*** is required for the design are determined and procedures are established to ensure that these are obtained.

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ELEMENT	PERFORMANCE CRITERIA
5. Develop a plan and methodology for finalising fire systems design projects.	5.1. Steps and timeframes in the fabrication support process are established according to workplace and project requirements. 5.2. Steps and timeframes in the installation support process are established according to workplace and project requirements. 5.3. ***Final drawing and documentation requirements*** are established according to workplace and project requirements.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills

• accurate naming and filing of drawings, including:
  • formal document control
  • formal amendments, including:
  • history
  • transmittal notices
• editing and creating drawings, including:
  • layout
  • section
  • detail
  • external references
  • freezing layers
• operating computer software packages and systems, including:
  • word processing
  • spreadsheet
  • email
  • internet
  • proprietary project management software
• numeracy skills for calculating timeframes
• language and literacy skills for:
  • listening to and communicating clearly with colleagues and contractors
  • participating in meetings, such as negotiations with fire engineering

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REQUIRED SKILLS AND KNOWLEDGE
consultant, architect, builder or other service contractors • reading and interpreting drawings, plans and specifications, including: • architectural • structural • mechanical • hydraulic • electrical • developing constructive and cooperative working relationships with project team members, workplace colleagues, suppliers, installers, fitters and clients • project management • organising own work, including creating personal systems and checklists for planning, managing and checking work • lateral thinking and problem solving
Required knowledge
• workplace design tools and processes • level of accuracy required in detailed design drawings • naming conventions for design drawings and drawing register • computer software functions and operation, including: • word processing • spreadsheet • email • internet • proprietary project management software • fire systems' technology and components, including: • water-based systems, including: • wet pipe sprinkler systems • deluge and drencher systems • dry pipe sprinkler systems • pre-action sprinkler systems • early suppression fast response (ESFR) • hydrants, hose reels and monitors • water supply tanks • fire pump sets • detection and warning systems, including: • emergency warning and intercommunications systems (EWIS) • fire detection and alarm systems • smoke control systems • emergency lighting systems

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REQUIRED SKILLS AND KNOWLEDGE

• purpose and operation of fire systems, including:
  • layout
  • special products and hazards
  • system operation
  • performance requirements
  • maintenance standards
  • system activation and operation
• passive fire safety elements:
  • identification of passive elements
  • impact of fire systems design on passive elements
  • specifications required to safeguard integrity of passive fire element performance where penetrations are necessitated by the fire systems design
• basic principles of structural engineering
• characteristics of building materials
• construction industry terminology
• roles and responsibilities of relevant building project personnel, including:
  • architect
  • lead contractor
  • mechanical engineer
  • hydraulic engineer
  • electrical engineer
• on-site issues that can arise during the construction phase and impose changes to the designs of fire systems and other services
• contractual processes

Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that the simulated or project-based assessment fully replicates workplace conditions, materials, activities, responsibilities and procedures.

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EVIDENCE GUIDE	
	This unit could be assessed as an activity involving the development of a project plan and methodology for several different types of fire systems design projects. This should include the establishment of team member responsibilities, administrative and communications procedures, document management, scheduling, timelines and arrangements for project finalisation activities.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the required skills and knowledge specified within this unit.
	
	In particular the person should demonstrate:
	
	• an understanding of the roles of project team members
	• appropriate consultation and negotiation with project team members, including lead contractor, architect and other services' designers and installation contractors
	• an understanding of project management processes and the ability to use project management tools effectively for scheduling, communications and file sharing
	• the ability to plan, organise and conduct fire systems design activities, including installation support and finalisation in line with project timelines, and compliance and quality requirements for a range of fire systems design projects, including:
	  • low-rise buildings
	  • medium-rise buildings
	  • high-rise buildings (over 25 metres)
	  • buildings over 45 metres in height.

Context of and specific resources for assessment	Assessment of essential underpinning knowledge may be conducted in an off-site context. It is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • project documentation, including plans, schedules, design briefs and specifications • copies of codes, standards, legislation and

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EVIDENCE GUIDE	
	regulatory requirements • access to information and communications technology - hardware and software.
Method of assessment	Assessment must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments.
Guidance information for assessment	Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Project management roles may	• client

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RANGE STATEMENT	
include:	• lead contractor or builder • fire engineering consultant • architect • mechanical engineer or contractor • structural engineer or contractor • electrical engineer or contractor • hydraulic engineer or contractor.

Fire systems may include:	• water-based systems, including:
	  • wet pipe sprinkler systems
	  • deluge and drencher systems
	  • dry pipe sprinkler systems
	  • pre-action sprinkler systems
	  • early suppression fast response (ESFR)
	  • hydrants, hose reels and monitors
	• detection and warning systems, including:
	  • emergency warning and intercommunications systems (EWIS)
	  • fire detection and alarm systems
	  • smoke control systems
	  • emergency lighting systems.

Project documentation may include:	• drawings, including:
	  • architectural
	  • structural
	  • mechanical
	  • hydraulic
	  • electrical
	  • layout
	  • section
	  • detail
	  • external references
	• project plan
	• project schedule
	• design brief
	• design specifications.

Regulatory or other approval may include sign-off by:	• building surveyor • fire brigade • fire engineer.
Final drawing and	• 'as installed' drawings

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RANGE STATEMENT	
documentation requirements may include:	• block plans • tactical fire plans • commissioning benchmarks • operations and maintenance manuals.

Unit Sector(s)

Unit sector	Fire systems design

Co-requisite units

Co-requisite units	Nil

Competency field

Competency field	

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CPCSFS5005A Research and evaluate fire system technologies and components

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency specifies the outcomes required to research, evaluate and select existing, new and incoming technologies and components for fire system detection and suppression systems. The unit also involves developing a broad understanding of the range of products available and their application, operation, performance and interaction. Licensing, legislative, regulatory or certification requirements may apply to this unit and so the varying state or territory requirements should be confirmed with the relevant body.

Application of the Unit

Application of the unit	This unit of competency supports the work of fire systems' designers and certifiers who need to: • understand the characteristics, operation and interaction of fire system technologies and components • select and assess fire system technologies and components. Fire systems are limited to those within the deemed-to-satisfy provisions of the Building Code of Australia or alternative solutions designed by fire engineers. This unit does not apply to fire systems for special hazard locations.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units	Nil

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Research and evaluate fire suppression systems.	1.1. The range of ***technologies and components for fire suppression systems*** is researched and identified. 1.2. The suitability of fire suppression systems to different types of buildings and situations is assessed with reference to ***relevant legislation, codes and standards***. 1.3. The ***performance characteristics and limitations of fire suppression systems*** are determined. 1.4. Fire suppression system failures are analysed and appropriate design solutions are proposed. 1.5. Suitable and cost-effective fire suppression system technologies and components are selected for a range of buildings and situations.
2. Research and evaluate fire detection and occupant warning systems.	2.1. The range of ***technologies and components available for fire detection and occupant warning systems*** is researched and identified. 2.2. The suitability of fire detection and occupant warning systems to different types of buildings and situations is assessed with reference to relevant legislation, codes and standards. 2.3. The ***performance characteristics and limitations of fire detection and occupant warning systems*** are determined. 2.4. Fire detection and occupant warning system failures are analysed and appropriate design solutions are proposed. 2.5. Suitable and cost-effective fire detection and occupant warning system technologies and components are selected for a range of buildings and situations.
3. Analyse and specify the interaction of fire systems.	3.1. The required interactions for effective operation of fire systems in different types of buildings and situations are analysed and specified. 3.2. The interfaces that affect interactions between fire systems in different types of buildings and situations are identified and examined. 3.3. Suitable fire detection and suppression systems are selected for a range of buildings and situations and the interactions and interfaces required for effective performance are specified.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- analytical skills to assess performance features and suitability of system technologies and components
- operating computer software packages and systems, including:
  - word processing
  - spreadsheet
  - email
  - internet
  - proprietary hydraulic calculation software
  - proprietary estimating software
  - parametric modelling of services coordination using proprietary software, such as Navis-Works or MEP-REVIT
- language and literacy skills for:
  - listening to and communicating clearly with colleagues, installers, suppliers and contractors
  - researching, accessing, reading, interpreting and applying current relevant legislation, codes and standards
  - updating knowledge of products, software systems and technology
  - reading and interpreting drawings, plans and specifications, including:
  - architectural
  - structural
  - mechanical
  - hydraulic
  - electrical
  - researching and evaluating competing technologies in new products and systems
- numeracy skills to evaluate cost-effectiveness of various systems and components
- developing constructive and cooperative working relationships with project team members, workplace colleagues, suppliers, installers, manufacturers and industry professionals who may supply information relevant to research and evaluation activities
- organising own work, including creating personal systems and checklists for planning, managing and checking work

Required knowledge

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REQUIRED SKILLS AND KNOWLEDGE

- workplace design tools and processes
- fire science, including:
  - fire behaviour and dynamics
  - impact of fire on structures and materials
  - products of combustion
  - fire control strategies
  - fire retardants
  - fire detection technologies
  - fire suppression technologies
  - fire containment
- computer software functions and operation, including:
  - word processing
  - spreadsheet
  - email
  - internet
  - proprietary hydraulic calculation software
  - proprietary estimating software
  - parametric modelling software, such as Navis-Works or MEP-REVIT
- relevant current legislation, codes and standards, including:
  - building Acts
  - building regulations
  - infrastructure supply regulations
  - the Building Code of Australia
  - Australian standards for fire systems
  - international standards for fire systems
  - other fire system standards commonly required by building insurers
- fire systems' technology and components, including:
  - water-based systems, including:
  - wet pipe sprinkler systems
  - deluge and drencher systems
  - dry pipe sprinkler systems
  - pre-action sprinkler systems
  - early suppression fast response (ESFR)
  - hydrants, hose reels and monitors
  - water supply tanks
  - fire pump sets
  - detection and warning systems, including:
  - emergency warning and intercommunications systems (EWIS)

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REQUIRED SKILLS AND KNOWLEDGE
• fire detection and alarm systems • smoke control systems • emergency lighting systems • purpose and operation of fire systems, including: • layout • high hazard products • system operation • performance requirements • maintenance standards • system activation and operation • characteristics and limitations of products and materials used in fire systems and issues relating to material compatibility • interconnection of fire systems, including: • cause and effect matrix • interface with other services • water supplies, including: • common water sources • conservation requirements • in-ground reticulation • booster configurations • fluid mechanics and hydraulics relating to: • water supply • pressure • pump selection • tank selection • pressure vessels • pipe range • sustainability requirements and ratings, including: • energy conservation • water conservation • principles of organic and inorganic chemistry • principles of physical sciences, including: • Boyle's Law • Charles' Law • Dalton's Law • Henry's Law • principles of thermodynamics, including: • effects of heat

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REQUIRED SKILLS AND KNOWLEDGE
• stratification of gases • smoke and heat dynamics • electrical and electronics theory, including: • units used to measure current (AC and DC), power, capacitance, inductance and sound attenuation • effects of AC and DC current in series and parallel circuit paths that includes resistive, inductive and capacitive loads • relationship between voltage drops around a circuit and applied voltage • definition of voltage ratings as defined in communication and electrical safety regulations, including extra low voltage, low voltage and hazardous voltages • layout of electrical wiring systems to meet communication and electrical safety regulations applicable to fire detection and warning systems • basic operation of common electronic and electrical components used in fire detection and warning systems • basic operation of communication protocols on addressable systems, peripheral devices (printers) and high-level interfaces to other communication devices used in fire detection and warning systems • communication technologies, including: • data transfer • networking • communication protocols • radio frequency technologies • acoustics and speech intelligibility for occupant warning systems • human psychology, especially fire avoidance behaviour • financial management, including: • budgeting • cost-effectiveness

Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace

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EVIDENCE GUIDE	
	environment, provided that the simulated or project-based assessment fully replicates workplace conditions, materials, activities, responsibilities and procedures. This unit could be assessed as an activity involving research, evaluation and selection of fire detection and suppression systems for a range of types of fire systems design projects. The activity should also include the preparation of specifications for the interactions and interfaces required for the effective operation of the systems in the event of a fire.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the required skills and knowledge specified within this unit.
	
	In particular the person should demonstrate:
	
	• the ability to read and interpret a range of documents, including design briefs and specifications for fire systems design projects, and manufacturer specifications and technical performance data for a range of fire detection and suppression technologies and components
	• the ability to evaluate and compare the performance and cost-effectiveness of different technologies and components with similar applications:
	  • for fire detection and suppression systems
	  • for a range of different fire systems design projects
	• the ability to assess the suitability of fire detection and suppression systems technology and components for a range of applications in different fire systems design projects, including:
	  • low-rise buildings
	  • medium-rise buildings
	  • high-rise buildings (over 25 metres)
	  • buildings over 45 metres in height
	• the ability to specify the required interactions and interfaces between fire detection and

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EVIDENCE GUIDE	
	suppression systems in a range of different fire systems design projects.
Context of and specific resources for assessment	Assessment of essential underpinning knowledge may be conducted in an off-site context. It is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • design briefs, drawings, plans and specifications • manufacturer specifications and performance data for a range of fire detection and suppression systems technologies and components • copies of codes, standards, legislation and regulatory requirements • access to information and communications technology - hardware and software.
Method of assessment	Assessment must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments.
Guidance information for assessment	Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
1.1. ***Technologies and components for fire suppression systems*** may include:	• wet pipe sprinkler systems and components • dry pipe sprinkler systems and components • pre-action sprinkler systems and components • early suppression fast response (ESFR) sprinkler systems and components • fire control panels • hydrants • hose reels • monitors • water supply tanks • fire pump sets • valves.
Relevant legislation, codes and standards may include:	• building Acts and regulations • the Building Code of Australia (BCA) • Australian standards for fire systems • international standards for fire systems • codes and standards required by building insurers.
Performance characteristics and limitations of fire suppression systems may include:	• system activation and operation • effect of fire, heat and smoke of component materials • interaction with other systems and services.
Technologies and components available for fire detection and occupant warning systems may include:	• emergency warning and intercommunications systems (EWIS) • fire detection and alarm systems • smoke control systems • emergency lighting systems • fire control panels.
1.2. ***Performance characteristics and***	• system activation and operation • effect of fire, heat and smoke on component

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RANGE STATEMENT	
limitations of fire detection and occupant warning systems may include:	materials • interaction with other systems and services.

Unit Sector(s)

Unit sector	Fire systems design

Co-requisite units

Co-requisite units	Nil

Competency field

Competency field	

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CPCSFS5006A Create detailed designs for fire sprinkler systems

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency specifies the outcomes required to obtain, process and set up drawings for the detailed design of fire sprinkler systems. The unit also involves assessing and selecting component requirements, setting out the locations of components, and creating final notated drawings. Licensing, legislative, regulatory or certification requirements may apply to this unit and so the varying state or territory requirements should be confirmed with the relevant body.

Application of the Unit

Application of the unit	This unit of competency supports the role of fire systems' designers with responsibility for creating detailed designs for sprinkler fire suppression systems. Fire systems designs are limited to those within the deemed-to-satisfy provisions of the Building Code of Australia or detailed fire systems designs for alternative solutions designed by fire engineers. This unit does not apply to fire systems for special hazard locations.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units	Nil

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Set up fire systems design drawings.	1.1. Relevant ***project drawings and documentation*** are requested, received, named and filed according to workplace procedures. 1.2. Drawings are cleaned to leave minimal essential information. 1.3. Layers showing designs of other services are imported into clean architectural or structural drawings. 1.4. Details from drawings of the floor of the level above are added, if these affect the design. 1.5. The detailed design drawings are named, filed and backed up according to workplace procedures.
2. Lay out the fire sprinkler system design.	2.1. A site visit is conducted if possible to confirm dimensions and assess installation risks and constraints. 2.2. The exact location of sprinklers is determined and notated on the drawing according to relevant ***codes and standards***. 2.3. The most ***efficient and workable layout and location*** of ***sprinkler system components*** are determined and notated on the drawing according to workplace procedures. 2.4. Dimensions are calculated, checked and notated on the drawing according to workplace procedures.
3. Submit drawings for approval and finalise design process.	3.1. Fire sprinkler system design drawings are submitted to relevant personnel within the scheduled timeframe. 3.2. Required amendments to design drawings are made or ***negotiated*** as required. 3.3. Final approved design drawings are processed and distributed according to project and workplace requirements. 3.4. ***Fittings and components*** are selected and ordered according to project and workplace requirements.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- accurate measuring
- accurate naming and filing of drawings, including:
  - formal document control
  - formal amendments, including:
  - history
  - transmittal notices
- editing and creating drawings, including:
  - layout
  - section
  - detail
  - external references
  - freezing layers
- operating computer software packages and systems, including:
  - word processing
  - spreadsheet
  - email
  - internet
  - proprietary project management software
  - proprietary hydraulic calculation software
  - parametric modelling of services coordination using proprietary software, such as Navis-Works or MEP-REVIT
- numeracy skills for:
  - calculating dimensions and pipe lengths
  - performing fluid mechanic calculations
- language and literacy skills for:
  - listening to and communicating clearly with colleagues, installers, suppliers and contractors
  - participating in meetings, such as negotiations with fire engineering consultant, architect, builder or other service contractors
  - researching, accessing, reading, interpreting and applying current relevant legislation, codes and standards
  - letter writing, especially to formalise:
  - recognition of conflicts and errors on drawings supplied by other service contractors
  - agreements with other services, for example whichever service is fitted last must fit around existing services

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REQUIRED SKILLS AND KNOWLEDGE
• updating knowledge of products, software systems and technology • reading and interpreting drawings, plans and specifications, including: • architectural • structural • mechanical • hydraulic • electrical • researching and evaluating competing technologies in new products and systems • developing constructive and cooperative working relationships with project team members, workplace colleagues, suppliers, installers and clients • negotiation and conflict management • initiating and running meetings with lead contractor and other service contractors • organising own work, including creating personal systems and checklists for planning, managing and checking work • lateral thinking and problem solving • maintaining concentration, focus and attention to detail for long periods • managing detailed input to concurrent fire systems design projects at different stages of the process and with diverse sets of regulatory requirements
Required knowledge
• workplace design tools and processes • level of accuracy required in detailed design drawings • naming conventions for design drawings and drawing register • fire science, including: • fire behaviour and dynamics • impact of fire on structures and materials • products of combustion • fire control strategies • fire retardants • fire detection technologies • fire suppression technologies • fire containment • computer software functions and operation, including: • word processing • spreadsheet • email • internet • proprietary project management software

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REQUIRED SKILLS AND KNOWLEDGE

- proprietary hydraulic calculation software
- parametric modelling software, such as Navis-Works or MEP-REVIT
- relevant current legislation, codes and standards, including:
  - building Acts
  - building regulations
  - infrastructure supply regulations
  - the Building Code of Australia
  - Australian standards for fire systems
  - international standards for fire systems
  - other fire system standards commonly required by building insurers
- protection requirements for different buildings
- fire systems' technology and components for water-based systems, including:
  - wet pipe sprinkler systems
  - deluge and drencher systems
  - dry pipe sprinkler systems
  - pre-action sprinkler systems
  - early suppression fast response (ESFR)
- purpose and operation of fire systems, including:
  - layout
  - system operation
  - performance requirements
  - maintenance standards
  - system activation and operation
- characteristics and limitations of products and materials used in fire systems and issues relating to material compatibility
- passive fire safety elements:
  - identification of passive elements
  - impact of fire systems design on passive elements
  - specifications required to safeguard integrity of passive fire element performance where penetrations are necessitated by the fire systems design
- interconnection of fire systems, including:
  - cause and effect matrix
  - interface with other services
- basic principles of structural engineering
- characteristics of building materials
- construction industry terminology
- roles and responsibilities of relevant building project personnel, including:
  - architect

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REQUIRED SKILLS AND KNOWLEDGE
• lead contractor • mechanical engineer • hydraulic engineer • electrical engineer • on-site issues that can arise during the construction phase and impose changes to the designs of fire systems and other services • installation methods, including: • access requirements • health and safety requirements • fluid mechanics and hydraulics relating to pipe range • sustainability requirements and ratings, including: • energy conservation • water conservation • pipe fabrication methods and constraints • mathematic principles, equations and calculation methods, including: • financial calculations, for example to assess cost-effectiveness of fire systems • trigonometry, for example to amend dimensions of pipe allowing for fittings • flow calculations, including: • area of operations • discharge rates and quantities • discharge times • pressure gain and loss • K-factors • pressure, temperature and volume relationship • Hazen-Williams equation • Darcy-Weisbach equation • computational fluid dynamics • principles of organic and inorganic chemistry • principles of physical sciences, including: • Boyle's Law • Charles' Law • Dalton's Law • Henry's Law • principles of thermodynamics, including: • effects of heat • stratification of gases • smoke and heat dynamics

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REQUIRED SKILLS AND KNOWLEDGE
• human psychology, especially fire avoidance behaviour • contractual processes

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that the simulated or project-based assessment fully replicates workplace conditions, materials, activities, responsibilities and procedures. This unit could be assessed as an activity involving the effective performance and application of principles relating to the design of fire sprinkler systems for a range of different types of buildings.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the required skills and knowledge specified within this unit.
	
	In particular the person should demonstrate:
	
	• the ability to:
	  • read and interpret a range of design drawings
	  • create, manipulate, save, file and share design drawings
	  • identify, interpret and apply relevant current legislation, codes, standards and regulatory requirements impacting on fire sprinkler system designs
	  • interpret and apply fire engineer's designs for alternative solutions
	• an understanding of technical issues impacting on fire sprinkler system designs
	• an understanding of the relevant regulatory approval and fire systems design certification processes
	• the ability to produce fully compliant designs for fire sprinkler systems which also meet client requirements, including:
	  • wet pipe
	  • dry pipe

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EVIDENCE GUIDE	
	• pre-action • early suppression fast response (ESFR) • combination systems • the ability to produce fully compliant designs for fire sprinkler systems for a range of types of sites, including: • low-rise buildings • medium-rise buildings • high-rise buildings (over 25 metres) • buildings over 45 metres in height.
Context of and specific resources for assessment	Assessment of essential underpinning knowledge may be conducted in an off-site context. It is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • design briefs, drawings, plans and specifications • copies of codes, standards, legislation and regulatory requirements • access to information and communications technology - hardware and software • access to relevant manufacturer's information regarding fittings and components.
Method of assessment	Assessment must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments.
Guidance information for assessment	Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to

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EVIDENCE GUIDE	
	modified equipment and other physical resources, and the provision of appropriate assessment support. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Project drawings and documentation may include:	• architectural • structural • mechanical • electrical • hydraulic • fire engineer's or estimator's specifications.
Codes and standards may include:	• the Building Code of Australia • current relevant Australian standards for fire systems • current relevant international standards for fire systems • codes and standards stipulated by the building insurer.

Efficient and workable layout and location relate to:	• selection of cost-effective components and materials
	• consideration of:
	  • penetrations
	  • conflict with other services
	  • occupational health and safety risks
	  • access constraints
	  • installation problems

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RANGE STATEMENT	
	• aesthetic requirements • efficiencies to facilitate work on site and reduce labour costing.

Sprinkler system components may include:	• discharge nozzles
	• pipework
	• brackets
	• system valves
	• zone valves
	• fire panels
	• specific components for:
	  • wet pipe sprinkler systems
	  • deluge and drencher systems
	  • dry pipe sprinkler systems
	  • pre-action sprinkler systems
	  • early suppression fast response (ESFR) systems.

Negotiations regarding amendments to design drawings may arise due to:	• non-compliance with applicable legislation, codes and standards • impact on installation risks and constraints • impact on cost-effectiveness.
Fittings and components may include:	• hangers • sprinkler heads • elbows • tees • control valves.

Unit Sector(s)

Unit sector	Fire systems design

Co-requisite units

Co-requisite units	Nil

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Competency field

Competency field	

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CPCSFS5007A Create detailed designs for hydrant and hose reel systems

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency specifies the outcomes required to obtain, process and set up drawings for the detailed design of hydrant and hose reel systems. The unit also involves assessing and selecting component requirements, setting out the locations of components and creating final notated drawings. Licensing, legislative, regulatory or certification requirements may apply to this unit and so the varying state or territory requirements should be confirmed with the relevant body.

Application of the Unit

Application of the unit	This unit of competency supports the role of fire systems' designers with responsibility for creating detailed designs for hydrant and hose reel fire suppression systems. Fire systems designs are limited to those within the deemed-to-satisfy provisions of the Building Code of Australia or detailed fire systems designs for alternative solutions designed by fire engineers. This unit does not apply to fire systems for special hazard locations.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units	Nil

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Set up fire systems design drawings.	1.1. Relevant ***project drawings and documentation*** are requested, received, named and filed according to workplace procedures. 1.2. Drawings are cleaned to leave minimal essential information. 1.3. Layers showing designs of other services are imported into clean architectural or structural drawings. 1.4. Details from drawings of the floor of the level above are added, if these affect the design. 1.5. The detailed design drawings are named, filed and backed up according to workplace procedures.
2. Lay out the hydrant and hose reel design.	2.1. A site visit is conducted if possible to confirm dimensions and assess installation risks and constraints. 2.2. The exact location of hydrants and hose reels is determined and notated on the drawing according to relevant ***codes and standards***. 2.3. The most ***efficient and workable layout and location*** of ***hydrant and hose reel system components*** are determined and notated on the drawing according to workplace procedures. 2.4. Dimensions are calculated, checked and notated on the drawing according to workplace procedures.
3. Submit drawings for approval and finalise design process.	3.1. Fire hydrant and hose reel system design drawings are submitted to relevant personnel within the scheduled timeframe. 3.2. Required amendments to design drawings are made or ***negotiated*** as required. 3.3. Final approved design drawings are processed and distributed according to project and workplace requirements. 3.4. Fittings and components are selected and ordered according to project and workplace requirements.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- accurate measuring
- accurate naming and filing of drawings, including:
  - formal document control
  - formal amendments, including:
  - history
  - transmittal notices
- editing and creating drawings, including:
  - layout
  - section
  - detail
  - external references
  - freezing layers
- operating computer software packages and systems, including:
  - word processing
  - spreadsheet
  - email
  - internet
  - proprietary project management software
  - proprietary hydraulic calculation software
  - parametric modelling of services coordination using proprietary software, such as Navis-Works or MEP-REVIT
- numeracy skills for:
  - calculating dimensions, pipe lengths and piping friction loss
  - performing fluid mechanic calculations
- language and literacy skills for:
  - listening to and communicating clearly with colleagues, installers, suppliers and contractors
  - participating in meetings, such as negotiations with fire engineering consultant, architect, builder or other service contractors
  - researching, accessing, reading, interpreting and applying current relevant legislation, codes and standards
  - letter writing, especially to formalise:
  - recognition of conflicts and errors on drawings supplied by other service contractors
  - agreements with other services, for example whichever service is fitted last must fit around existing services

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REQUIRED SKILLS AND KNOWLEDGE
• updating knowledge of products, software systems and technology • reading and interpreting drawings, plans and specifications, including: • architectural • structural • mechanical • hydraulic • electrical • researching and evaluating competing technologies in new products and systems • report writing • developing constructive and cooperative working relationships with project team members, workplace colleagues, suppliers, installers and clients • negotiation and conflict management • initiating and running meetings with lead contractor and other service contractors • organising own work, including creating personal systems and checklists for planning, managing and checking work • lateral thinking and problem solving • maintaining concentration, focus and attention to detail for long periods • managing detailed input to concurrent fire systems design projects at different stages of the process and with diverse sets of regulatory requirements
Required knowledge
• workplace design tools and processes • level of accuracy required in detailed design drawings • naming conventions for design drawings and drawing register • fire science, including: • fire behaviour and dynamics • impact of fire on structures and materials • products of combustion • fire control strategies • fire retardants • fire detection technologies • fire suppression technologies • fire containment • computer software functions and operation, including: • word processing • spreadsheet • email • internet

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REQUIRED SKILLS AND KNOWLEDGE

- proprietary project management software
- proprietary hydraulic calculation software

- relevant current legislation, codes and standards, including:
  - building Acts
  - building regulations
  - infrastructure supply regulations
  - the Building Code of Australia
  - Australian standards for fire systems
  - international standards for fire systems
  - other fire system standards commonly required by building insurers
- protection requirements for different buildings
  - fire systems' technology and components for hydrant and hose reel systems
- purpose and operation of fire systems, including:
  - layout
  - special products and hazards
  - system operation
  - performance requirements
  - maintenance standards
  - system activation and operation
- characteristics and limitations of products and materials used in fire systems and issues relating to material compatibility
- passive fire safety elements:
  - identification of passive elements
  - impact of fire systems design on passive elements
  - specifications required to safeguard integrity of passive fire element performance where penetrations are necessitated by the fire systems design
- interconnection of fire systems, including:
  - cause and effect matrix
  - interface with other services
- basic principles of structural engineering
- characteristics of building materials
- construction industry terminology
- roles and responsibilities of relevant building project personnel, including:
  - architect
  - lead contractor
  - mechanical engineer
  - hydraulic engineer
  - electrical engineer
- on-site issues that can arise during the construction phase and impose changes to

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REQUIRED SKILLS AND KNOWLEDGE

the designs of fire systems and other services
• installation methods, including:
  • access requirements
  • health and safety requirements
• sustainability requirements and ratings, including:
  • energy conservation
  • water conservation
• pipe fabrication methods and constraints
• mathematic principles, equations and calculation methods, including:
  • financial calculations, for example to assess cost-effectiveness of fire systems
  • trigonometry, for example to amend dimensions of pipe allowing for fittings
  • flow calculations, including:
  • area of operations
  • discharge rates and quantities
  • discharge times
  • pressure gain and loss
  • K-factors
  • pressure, temperature and volume relationship
  • Hazen-Williams equation
  • Darcy-Weisbach equation
  • computational fluid dynamics
• basic principles of organic and inorganic chemistry
• principles of physical sciences, including:
  • Boyle's Law
  • Charles' Law
  • Dalton's Law
  • Henry's Law
• basic principles of thermodynamics, including:
  • effects of heat
  • stratification of gases
  • smoke and heat dynamics
• human psychology, especially fire avoidance behaviour
• contractual processes

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that the simulated or project-based assessment fully replicates workplace conditions, materials, activities, responsibilities and procedures. This unit could be assessed as an activity involving the effective performance and application of principles relating to the design of hydrant and hose reel systems for a range of different types of buildings.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the required skills and knowledge specified within this unit.
	
	In particular the person should demonstrate:
	
	• the ability to:
	  • read and interpret a range of design drawings
	  • use workplace design tools to create, manipulate, save or file, and share design drawings
	  • identify, interpret and apply relevant current legislation, codes, standards and regulatory requirements impacting on hydrant and hose reel system designs
	  • interpret and apply fire engineer's designs for alternative solutions
	• an understanding of technical issues impacting on hydrant and hose reel designs
	• an understanding of the relevant regulatory approval and fire systems design certification processes
	• the ability to produce designs for hydrant and hose reel systems which comply with applicable legislation, regulations, codes and standards, and meet client requirements, in a

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EVIDENCE GUIDE	
	range of types of sites, including: • low-rise buildings • medium-rise buildings • high-rise buildings (over 25 metres) • buildings over 45 metres in height.
Context of and specific resources for assessment	Assessment of essential underpinning knowledge may be conducted in an off-site context. It is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • design briefs, drawings, plans and specifications • copies of codes, standards, legislation and regulatory requirements • access to information and communications technology - hardware and software • access to manufacturer's information regarding fittings and components.
Method of assessment	Assessment must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments.
Guidance information for assessment	Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in

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EVIDENCE GUIDE	
	relation to the competency being assessed.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Project drawings and documentation may include:	• architectural • structural • mechanical • electrical • hydraulic • fire engineer's or estimator's specifications.
Codes and standards may include:	• the Building Code of Australia • current relevant Australian standards for fire systems • current relevant international standards for fire systems • codes and standards stipulated by the building insurer.

Efficient and workable layout and location relate to:	• selection of cost-effective components and materials
	• consideration of:
	  • penetrations, especially through passive fire safety elements
	  • conflict with other services
	  • occupational health and safety risks
	  • access constraints
	  • installation problems
	  • aesthetic requirements
	  • efficiencies to facilitate work on site and reduce labour costing.

Hydrant and hose reel system	• hose reels

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RANGE STATEMENT	
components may include:	• hydrant valves • booster valves.
Negotiations regarding amendments to design drawings may arise due to:	• non-compliance with applicable legislation, codes and standards • impact on installation risks and constraints • impact on cost-effectiveness.

Unit Sector(s)

Unit sector	Fire systems design

Co-requisite units

Co-requisite units	Nil

Competency field

Competency field	

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CPCSFS5008A Create detailed designs for fire detection and warning systems

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency specifies the outcomes required to obtain, process and set up drawings for the detailed design of fire detection and warning systems. The unit also involves assessing and selecting component requirements, setting out the locations of components and creating final notated drawings. Licensing, legislative, regulatory or certification requirements may apply to this unit and so the varying state or territory requirements should be confirmed with the relevant body.

Application of the Unit

Application of the unit	This unit of competency supports the role of fire systems' designers with responsibility for creating detailed designs for fire detection and warning systems. Fire systems designs are limited to those within the deemed-to-satisfy provisions of the Building Code of Australia or detailed fire systems designs for alternative solutions designed by fire engineers. This unit does not apply to fire systems for special hazard locations.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units	Nil

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Set up fire systems design drawings.	1.1. Relevant ***project drawings and documentation*** are requested, received, named and filed according to workplace procedures. 1.2. Drawings are cleaned to leave minimal essential information. 1.3. Layers showing designs of other services are imported into clean architectural or structural drawings. 1.4. Details from drawings of the floor of the level above are added if these affect the design. 1.5. The detailed design drawing is named, filed and backed up according to workplace procedures.
2. Lay out the fire systems design.	2.1. A site visit is conducted if possible to confirm dimensions and assess installation risks and constraints. 2.2. The exact location of detectors is determined and notated on the drawing according to relevant ***codes and standards***. 2.3. The most ***efficient and workable layout and location*** of ***detection and warning system components*** are determined and notated on the drawing according to workplace procedures. 2.4. Dimensions are calculated, checked and notated on the drawing according to workplace procedures.
3. Specify component capacities and characteristics.	3.1. ***Electrical calculations*** are completed to assess requirements and confirm cable ranges. 3.2. Specific components most suitable for the application are selected and specified. 3.3. Electronic interfaces with other services are designed and specified. 3.4. Component requirements are communicated to suppliers with detailed drawings, as required, and within project timelines.
4. Submit drawings for approval and finalise design process.	4.1. Fire detection and warning system design drawings are submitted to relevant personnel within the scheduled timeframe. 4.2. Required amendments to design drawings are made or ***negotiated*** as required. 4.3. Final approved design drawings are processed and distributed according to project and workplace

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ELEMENT	PERFORMANCE CRITERIA
	requirements. 4.4. ***Fittings and components*** are selected and ordered according to project and workplace requirements.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills

• accurate measuring
• accurate naming and filing of drawings, including:
  • formal document control
  • formal amendments, including:
  • history
  • transmittal notices
• editing and creating drawings, including:
  • layout
  • section
  • detail
  • external references
  • freezing layers
• operating computer software packages and systems, including:
  • word processing
  • spreadsheet
  • email
  • internet
  • proprietary project management software
  • proprietary estimating software
  • parametric modelling of services coordination using proprietary software, such as Navis-Works or MEP-REVIT
• using BASIC computer programming language to write logic for electronic system interfaces
• numeracy skills for calculating:
  • voltage drops
  • battery capacity

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REQUIRED SKILLS AND KNOWLEDGE
• battery back-up • power supplies • cabling sizes and types • language and literacy skills for: • listening to and communicating clearly with colleagues, installers, suppliers and contractors • participating in meetings, such as negotiations with fire engineering consultant, architect, builder or other service contractors • researching, accessing, reading, interpreting and applying current relevant legislation, codes and standards • letter writing, especially to formalise: • recognition of conflicts and errors on drawings supplied by other service contractors • agreements with other services, for example whichever service is fitted last must fit around existing services • updating knowledge of products, software systems and technology • reading and interpreting drawings, plans and specifications, including: • architectural • structural • mechanical • hydraulic • electrical • researching and evaluating competing technologies in new products and systems • developing constructive and cooperative working relationships with project team members, workplace colleagues, suppliers, installers and clients • negotiation and conflict management • initiating and running meetings with lead contractor and other service contractors • organising own work, including creating personal systems and checklists for planning, managing and checking work • lateral thinking and problem solving • maintaining concentration, focus and attention to detail for long periods • managing detailed input to concurrent fire systems design projects at different stages of the process and with diverse sets of regulatory requirements
Required knowledge
• workplace design tools and processes • level of accuracy required in detailed design drawings • naming conventions for design drawings and drawing register • fire science, including:

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REQUIRED SKILLS AND KNOWLEDGE
• fire behaviour and dynamics • impact of fire on structures and materials • products of combustion • fire control strategies • fire retardants • fire detection technologies • fire suppression technologies • fire containment • computer software functions and operation, including: • word processing • spreadsheet • email • internet • proprietary project management software • proprietary estimating software • parametric modelling software, such as Navis-Works or MEP-REVIT • BASIC computer programming language • relevant current legislation, codes and standards, including: • building Acts • building regulations • infrastructure supply regulations • the Building Code of Australia • Australian standards for fire systems • international standards for fire systems • other fire system standards commonly required by building insurers • protection requirements for different buildings • fire detection and warning systems technology and components, including: • emergency warning and intercommunications systems (EWIS) • fire detection and alarm systems • smoke control systems • emergency lighting systems • purpose and operation of fire systems, including: • layout • special products and hazards • system operation • performance requirements • maintenance standards • system activation and operation

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REQUIRED SKILLS AND KNOWLEDGE

• characteristics and limitations of products and materials used in fire systems and issues relating to material compatibility
• passive fire safety elements:
  • identification of passive elements
  • impact of fire systems design on passive elements
  • specifications required to safeguard integrity of passive fire element performance where penetrations are necessitated by the fire systems design
• interconnection of fire systems, including:
  • cause and effect matrix
  • interface with other services
• basic principles of structural engineering
• characteristics of building materials
• construction industry terminology
• roles and responsibilities of relevant building project personnel, including:
  • architect
  • lead contractor
  • mechanical engineer
  • hydraulic engineer
  • electrical engineer
• on-site issues that can arise during the construction phase and impose changes to the designs of fire systems and other services
• installation methods, including:
  • access requirements
  • health and safety requirements
• sustainability requirements and ratings, including:
  • energy conservation
  • water conservation
• mathematic principles, equations and calculation methods, including:
  • financial calculations, for example to assess cost-effectiveness of fire systems
  • electrical calculations, including:
  • voltage drops
  • battery capacity
  • battery back-up
  • power supplies
  • cabling sizes and types
• electrical and electronics theory, including:
  • units used to measure current (AC and DC), power, capacitance, inductance and sound attenuation

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REQUIRED SKILLS AND KNOWLEDGE

• effects of AC and DC current in series and parallel circuit paths that includes resistive, inductive and capacitive loads
• relationship between voltage drops around a circuit and applied voltage
• definition of voltage ratings as defined in communication and electrical safety regulations, including extra low voltage, low voltage and hazardous voltages
• layout of electrical wiring systems to meet communication and electrical safety regulations applicable to fire detection and warning systems
• basic operation of common electronic and electrical components used in fire detection and warning systems
• basic operation of communication protocols on addressable systems, peripheral devices (printers) and high-level interfaces to other communication devices used in fire detection and warning systems
• communication technologies, including:
  • data transfer
  • networking
  • communication protocols
  • radio frequency technologies
• acoustics and speech intelligibility for occupant warning systems
• human psychology, especially fire avoidance behaviour
• financial management, including:
  • budgeting
  • cost-effectiveness
• contractual processes

Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that the simulated or project-based assessment fully replicates workplace conditions, materials, activities, responsibilities and procedures. This unit could be assessed as an activity

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EVIDENCE GUIDE	
	involving the effective performance and application of principles relating to the design of fire detection and occupant warning systems for a range of different types of buildings.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the required skills and knowledge specified within this unit.
	In particular the person should demonstrate:
	• the ability to:
	  • read and interpret a range of design drawings
	  • create, manipulate, save, file and share design drawings
	  • identify, interpret and apply relevant current legislation, codes, standards and regulatory requirements impacting on fire detection and warning system designs
	  • interpret and apply fire engineer's designs for alternative solutions
	• a comprehensive understanding of technical issues impacting on fire detection and occupant warning system designs
	• a comprehensive understanding of the relevant regulatory approval and fire systems design certification processes
	• the ability to produce fully compliant designs which also meet client requirements for fire detection and warning systems for a range of types of sites, including:
	  • low-rise buildings
	  • medium-rise buildings
	  • high-rise buildings (over 25 metres)
	  • buildings over 45 metres in height.

Context of and specific resources for assessment	Assessment of essential underpinning knowledge may be conducted in an off-site context. It is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • relevant design briefs, drawings, plans and

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EVIDENCE GUIDE	
	specifications • copies of relevant codes, standards, legislation and regulatory requirements • access to relevant information and communications technology - hardware and software • access to relevant manufacturer's information regarding fittings and components.
Method of assessment	Assessment must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments.
Guidance information for assessment	Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

RANGE STATEMENT
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating

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RANGE STATEMENT	
conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Project drawings and documentation may include:	• architectural • structural • mechanical • electrical • hydraulic • water-based fire suppression systems • fire engineer's or estimator's specifications.
Codes and standards may include:	• the Building Code of Australia • current relevant Australian standards for fire systems • current relevant international standards for fire systems • codes and standards stipulated by the building insurer.

Efficient and workable layout and location relate to:	• selection of cost-effective components and materials
	• consideration of:
	  • penetrations
	  • conflict with other services
	  • interfaces with other services
	  • occupational health and safety risks
	  • access constraints
	  • installation problems
	  • aesthetic requirements
	  • efficiencies to facilitate work on site and reduce labour costing.

Detection and warning system components may include:	• components for:
	  • emergency warning and intercommunications systems (EWIS)
	  • fire detection and alarm systems
	  • smoke control systems
	  • emergency lighting systems
	• fire alarm and control panels:
	  • conventional
	  • addressable
	• detectors, including:

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RANGE STATEMENT	
	• heat • smoke • flame sensing • spot • projected beam • aspiration type • power source • batteries • cabling.
Electrical calculations may include the calculation of:	• the voltage drop in a wiring path given the required electrical parameters • battery capacity requirements given the required performance parameters • power supply and battery charge capacity requirements given the required performance parameters • ***Cable*** Services Australia (***CSA***)cable size and cabling medium type given the required electrical performance parameters • total power supply consumption requirements of field equipment in normal and active (alarm) state given the required electrical performance parameters of equipment installed • the number of points, circuits and zones on a system given the required performance parameters of a wiring path.
Negotiations regarding amendments to design drawings may arise due to:	• non-compliance with applicable legislation, codes and standards • impact on installation risks and constraints • impact on cost-effectiveness.
Fittings and components may include:	• smoke alarms • smoke detectors • manual call buttons • fire alarm panels • fireproof cable • batteries • amplifiers • speakers • emergency lighting.

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Unit Sector(s)

Unit sector	Fire systems design

Co-requisite units

Co-requisite units	Nil

Competency field

Competency field	

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CPCSFS5009A Create detailed designs for fire systems' water supplies

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency specifies the outcomes required to obtain, process and set up drawings for the detailed design of water supplies for fire systems. The unit also involves assessing and selecting component requirements, setting out the locations of components and creating final notated drawings. Licensing, legislative, regulatory or certification requirements may apply to this unit and so the varying state or territory requirements should be confirmed with the relevant body.

Application of the Unit

Application of the unit	This unit of competency supports the role of fire systems' designers with responsibility for creating detailed designs for water supplies for fire systems. Fire systems designs are limited to those within the deemed-to-satisfy provisions of the Building Code of Australia or detailed fire systems designs for alternative solutions designed by fire engineers. This unit does not apply to fire systems for special hazard locations.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units	Nil

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Confirm water-based fire systems designs.	1.1. Relevant ***project drawings and documentation*** are requested, received, named and filed according to workplace procedures. 1.2. A site visit is conducted if possible to confirm details and dimensions and to assess water supply installation risks and constraints. 1.3. The exact location of ***fire system components*** is notated on detailed design drawings according to relevant ***codes and standards***. 1.4. The detailed design drawings are named, filed and backed up according to workplace procedures.
2. Calculate pipe sizes and pump and tank requirements.	2.1. Hydraulic calculations are completed to assess correct pressure requirements for the effective operation of water-based fire systems. 2.2. Water flow and pressure test results are conducted and/or analysed to establish the minimum levels of available supply. 2.3. Shortfalls in pressure are determined and the sizes of pumps and tanks required are calculated. 2.4. Options for cost-effective and efficient solutions are considered with reference to manufacturer specifications for the performance of components and according to workplace policies.
3. Lay out the water supply design.	3.1. The most ***efficient and workable layout and location*** of ***water supply components*** are determined and notated on the drawings according to workplace procedures. 3.2. Dimensions are calculated, checked and notated on the drawings according to workplace procedures.
4. Submit drawings for approval and finalise design process.	4.1. Water supply design drawings are submitted to relevant personnel within the scheduled timeframe. 4.2. Required amendments to design drawings are made or ***negotiated*** as required. 4.3. Final approved design drawings are processed and distributed according to project and workplace requirements. 4.4. Fittings and components are selected and ordered according to project and workplace requirements.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- accurate measuring
- accurate naming and filing of drawings, including:
  - formal document control
  - formal amendments, including:
  - history
  - transmittal notices
- editing and creating drawings, including:
  - layout
  - section
  - detail
  - external references
  - freezing layers
- operating computer software packages and systems, including:
  - word processing
  - spreadsheet
  - email
  - internet
  - proprietary project management software
  - proprietary hydraulic calculation software
  - parametric modelling of services coordination using proprietary software, such as Navis-Works or MEP-REVIT
- numeracy skills for:
  - calculating:
  - dimensions
  - pipe lengths
  - piping friction loss
  - tank size
  - pump capacity
  - motor output
  - performing fluid mechanic calculations
- language and literacy skills for:
  - listening to and communicating clearly with colleagues, installers, suppliers and contractors
  - participating in meetings, such as negotiations with fire engineering

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REQUIRED SKILLS AND KNOWLEDGE
consultant, architect, builder or other service contractors • researching, accessing, reading, interpreting and applying current relevant legislation, codes and standards • letter writing, especially to formalise: • recognition of conflicts and errors on drawings supplied by other service contractors • agreements with other services • updating knowledge of products, software systems and technology • reading and interpreting drawings, plans and specifications, including: • fire systems design • mechanical • hydraulic • electrical • researching and evaluating competing technologies in new products and systems • developing constructive and cooperative working relationships with project team members, workplace colleagues, suppliers, installers and clients • negotiation and conflict management • organising own work, including creating personal systems and checklists for planning, managing and checking work • lateral thinking and problem solving • maintaining concentration, focus and attention to detail for long periods • managing detailed input to concurrent design projects at different stages of the process and with diverse sets of regulatory requirements
Required knowledge
• workplace design tools and processes • level of accuracy required in detailed design drawings • naming conventions for design drawings and drawing register • fire science, including: • fire behaviour and dynamics • impact of fire on structures and materials • products of combustion • fire control strategies • fire retardants • fire detection technologies • fire suppression technologies • fire containment • computer software functions and operation, including: • word processing

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REQUIRED SKILLS AND KNOWLEDGE
• spreadsheet • email • internet • proprietary project management software • proprietary hydraulic calculation software • relevant current legislation, codes and standards, including: • building Acts • building regulations • infrastructure supply regulations • the Building Code of Australia • Australian standards for fire systems • international standards for fire systems • other fire system standards commonly required by building insurers • protection requirements for different buildings • fire systems' technology and components, including: • water-based systems, including: • wet pipe sprinkler systems • deluge and drencher systems • dry pipe sprinkler systems • pre-action sprinkler systems • early suppression fast response (ESFR) • hydrants, hose reels and monitors • water supply tanks • fire pump sets • fire system water supply technology and components, including: • electric pumps • diesel pumps • tanks • pressure vessels • booster configurations • purpose and operation of fire systems, including: • layout • high hazard products • system operation • performance requirements • maintenance standards • system activation and operation • characteristics and limitations of products and materials used in water supplies for

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REQUIRED SKILLS AND KNOWLEDGE

fire systems and issues relating to material compatibility
• passive fire safety elements:
  • identification of passive elements
  • impact of fire systems design on passive elements
  • specifications required to safeguard integrity of passive fire element performance where penetrations are necessitated by the fire systems design
• basic principles of structural engineering
• characteristics of building materials
• construction industry terminology
• roles and responsibilities of relevant building project personnel, including:
  • architect
  • lead contractor
  • mechanical engineer
  • hydraulic engineer
  • electrical engineer
• on-site issues that can arise during the construction phase and impose changes to the designs of fire systems, fire systems' water supplies and other services
• installation methods, including:
  • access requirements
  • health and safety requirements
• water supplies, including:
  • common water sources
  • conservation requirements
  • in-ground reticulation
  • booster configurations
• fluid mechanics and hydraulics relating to:
  • water supply
  • pressure
  • pump selection
  • tank selection
  • pressure vessels
  • pipe range
• sustainability requirements and ratings, including:
  • energy conservation
  • water conservation
• pipe fabrication methods and constraints
• mathematic principles, equations and calculation methods, including:
  • financial calculations, for example to assess cost-effectiveness of water supply

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REQUIRED SKILLS AND KNOWLEDGE
• trigonometry, for example to amend dimensions of pipe allowing for fittings • flow calculations, including: • area of operations • discharge rates and quantities • discharge times • pressure gain and loss • K-factors • pressure, temperature and volume relationship • Hazen-Williams equation • Darcy-Weisbach equation • computational fluid dynamics • basic principles of organic and inorganic chemistry • basic principles of physical sciences, including: • Boyle's Law • Charles' Law • Dalton's Law • Henry's Law • contractual processes

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that the simulated or project-based assessment fully replicates workplace conditions, materials, activities, responsibilities and procedures. This unit could be assessed as an activity involving the effective performance and application of principles relating to the design of water supplies for fire systems for a range of different types of buildings.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the required skills and knowledge specified within this unit.
	
	In particular the person should demonstrate:
	
	• an understanding of fluid dynamics, hydraulics and the calculations required for the design of water supplies for fire systems
	• the ability to:
	  • read and interpret a range of design drawings
	  • create, manipulate, save, file and share design drawings
	  • identify, interpret and apply relevant current legislation, codes, standards and regulatory requirements impacting on the design of water supplies for fire systems
	  • interpret and apply fire engineer's designs for alternative solutions
	• the ability to produce fully compliant designs which meet requirements for water supplies for fire systems in a range of types of buildings, including:
	  • low-rise buildings

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EVIDENCE GUIDE	
	• medium-rise buildings • high-rise buildings (over 25 metres) • buildings over 45 metres in height.
Context of and specific resources for assessment	Assessment of essential underpinning knowledge may be conducted in an off-site context. It is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • design briefs, drawings, plans and specifications • copies of codes, standards, legislation and regulatory requirements • access to information and communications technology - hardware and software • access to manufacturer's information regarding fittings and components.
Method of assessment	Assessment must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments.
Guidance information for assessment	Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Project drawings and documentation may include:	• proposed water-based fire systems designs • mechanical • electrical • hydraulic.
Fire system components may include:	• discharge nozzles • pipework • system valves • zone valves • fire panels • hose reels • hydrant valves • booster valves.
Codes and standards may include:	• the Building Code of Australia • current relevant Australian standards for fire systems • current relevant international standards for fire systems • codes and standards stipulated by the building insurer.

Efficient and workable layout and location relate to:	• consideration of a range of sustainable options for producing the required water pressure for water-based fire systems
	• selection of cost-effective components and materials
	• consideration of:
	  • penetrations, especially through passive fire safety elements
	  • conflict with other services
	  • occupational health and safety risks
	  • access constraints

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RANGE STATEMENT	
	• installation problems • aesthetic requirements • efficiencies to facilitate work on site and reduce labour costing.
Water supply components may include:	• electric pumps • diesel pumps • tanks • pressure vessels • booster configurations • components for water recovery systems.
Negotiations regarding amendments to design drawings may arise due to:	• non-compliance with applicable legislation, codes and standards • impact on installation risks and constraints • impact on cost-effectiveness.

Unit Sector(s)

Unit sector	Fire systems design

Co-requisite units

Co-requisite units	Nil

Competency field

Competency field	

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CPCSFS5010A Provide documentation and support for fabrication of fire sprinkler systems

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency specifies the outcomes required to assess issues relating to on-site installation of pipework for sprinkler systems. The unit also involves producing specifications and supporting documentation for the cost-effective fabrication of manageable pipework sections. Licensing, legislative, regulatory or certification requirements may apply to this unit and so the varying state or territory requirements should be confirmed with the relevant body.

Application of the Unit

Application of the unit	This unit of competency supports the role of fire systems' designers with responsibility for creating specifications and drawings for the fabrication of pipework sections for fire sprinkler systems. Fire systems are limited to those within the deemed-to-satisfy provisions of the Building Code of Australia or detailed fire systems designs for alternative solutions designed by fire engineers. This unit does not apply to fire systems for special hazard locations.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units	Nil

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine the impact on fabrication plans of installation risks and constraints.	1.1. ***On-site health and safety risks*** relating to the installation of sprinkler systems are identified. 1.2. ***Constraints relating to access*** to ***on-site installation locations*** for sprinkler system pipes and components are identified. 1.3. Impact of installation risks and constraints on fabrication plans for fire sprinkler system pipes and components is considered and cost-effective and manageable solutions are determined.
2. Plan and specify pipes, fittings and components.	2.1. ***Current accurate drawings and documentation*** are obtained and analysed, and measurements are taken on-site during construction if possible to confirm the accuracy of building dimensions. 2.2. The dimensions and design drawing locations of the selected ***fittings and components*** are checked and confirmed. 2.3. Fittings and components are planned and specified for ease and safety of installation and to provide cost-effective solutions. 2.4. Pipe lengths are calculated, specified and numbered on relevant drawings.
3. Produce fabrication documentation.	3.1. Appropriate pipe materials and features are confirmed and specified. 3.2. Supplier is consulted as necessary to discuss and negotiate efficient and cost-effective pipe fabrication options. 3.3. Individual ***pipe specifications*** are numbered and detailed on fabrication lists. 3.4. Drawings are supplied to support fabrication specifications, as required.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills

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REQUIRED SKILLS AND KNOWLEDGE

• accurate measuring
• accurate naming and filing of drawings, including:
  • formal document control
  • formal amendments, including:
  • history
  • transmittal notices
• editing and creating drawings, including:
  • layout
  • section
  • detail
  • external references
  • freezing layers
• fluent, detailed hand-drawing and sketching ability to convey information to on-site workers
• numeracy skills for:
  • calculating dimensions, pipe lengths and piping friction loss
  • performing fluid mechanic calculations
• language and literacy skills for:
  • listening to and communicating clearly with colleagues, installers, suppliers and contractors
  • reading and interpreting drawings, plans and specifications, including:
  • architectural
  • structural
  • mechanical
  • hydraulic
  • electrical
• developing constructive and cooperative working relationships with project team members, workplace colleagues, suppliers, installers and clients
• negotiation and conflict management
• organising own work, including creating personal systems and checklists for planning, managing and checking work
• lateral thinking and problem solving
• maintaining concentration, focus and attention to detail for long periods
• managing detailed input to concurrent fire systems design projects at different stages of the process and with diverse sets of regulatory requirements

Required knowledge
• workplace design tools and processes • level of accuracy required in detailed design drawings

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REQUIRED SKILLS AND KNOWLEDGE

• naming conventions for design drawings and drawing register
• relevant current legislation, codes and standards, including:
  • building Acts
  • building regulations
  • infrastructure supply regulations
  • the Building Code of Australia
  • Australian standards for fire systems
  • international standards for fire systems
  • other fire system standards commonly required by building insurers
• protection requirements for different buildings
• fire systems' technology and components, including water-based systems, such as:
  • wet pipe sprinkler systems
  • deluge and drencher systems
  • dry pipe sprinkler systems
  • pre-action sprinkler systems
  • early suppression fast response (ESFR)
• purpose and operation of fire systems, including:
  • layout
  • special products and hazards
  • system operation
  • performance requirements
  • maintenance standards
  • system activation and operation
• characteristics and limitations of products and materials used in fire systems and issues relating to material compatibility
• interconnection of fire systems, including:
  • cause and effect matrix
  • interface with other services
• basic principles of structural engineering
• characteristics of building materials
• construction industry terminology
• roles and responsibilities of relevant building project personnel, including:
  • architect
  • lead contractor
  • mechanical engineer
  • hydraulic engineer
  • electrical engineer
• on-site issues that can arise during the construction phase and impose changes to the designs of fire systems and other services

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REQUIRED SKILLS AND KNOWLEDGE

• installation methods, including:
  • access requirements
  • health and safety requirements
• water supplies, including:
  • common water sources
  • conservation requirements
  • in-ground reticulation
  • booster configurations
• fluid mechanics and hydraulics relating to pipe range
• sustainability requirements and ratings, including:
  • energy conservation
  • water conservation
• pipe fabrication methods and constraints
• mathematic principles, equations and calculation methods, including:
  • financial calculations, for example to assess cost-effectiveness of fire systems
  • trigonometry, for example to amend dimensions of pipe allowing for fittings

Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that the simulated or project-based assessment fully replicates workplace conditions, materials, activities, responsibilities and procedures. This unit could be assessed as an activity involving the production of pipe fabrication documentation for a range of fire sprinkler system design projects.
Critical aspects for assessment and evidence required to demonstrate competency in this	A person who demonstrates competency in this unit must be able to provide evidence of the required skills and knowledge specified within this

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EVIDENCE GUIDE	

unit	unit.
	In particular the person should demonstrate:
	• the ability to:
	  • read and interpret a range of design drawings
	  • create, manipulate, save, file and share design drawings
	• an understanding of technical issues impacting on fire sprinkler systems designs
	• an understanding of installation risks and constraints impacting on pipe fabrication specifications for fire sprinkler systems
	• the ability to produce safe, efficient and cost-effective solutions and accurate drawings and documentation for pipe fabrication work for fire sprinkler systems, including:
	  • wet pipe
	  • deluge and drencher
	  • dry pipe
	  • pre-action
	  • early suppression fast response (ESFR)
	  • combination systems
	• the ability to produce safe, efficient and cost-effective solutions and accurate drawings and documentation for pipe fabrication work for fire sprinkler systems in a range of project types, including:
	  • low-rise buildings
	  • medium-rise buildings
	  • high-rise buildings (over 25 metres)
	  • buildings over 45 metres in height.

Context of and specific resources for assessment	Assessment of essential underpinning knowledge may be conducted in an off-site context. It is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • design briefs, drawings, plans and specifications • copies of codes, standards, legislation and regulatory requirements

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EVIDENCE GUIDE	
	• access to information and communications technology - hardware and software • access to manufacturer's information.
Method of assessment	Assessment must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments.
Guidance information for assessment	Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
On-site health and safety risks	• manual handling

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RANGE STATEMENT	
may include:	• confined spaces • working at height.
Constraints relating to access may include:	• height of pipe • length of pipe • distance from beams • distance from walls.
On-site installation locations may include:	• ceiling space • roof space • under-floor • under-soffit.
Current accurate drawings and documentation must be obtained from consultants, lead contractor and other service contractors and should include:	• architectural • structural • mechanical • electrical • hydraulic • fire engineer's or estimator's specifications if available.
Fittings and components may include:	• hangers • sprinkler heads • elbows • tees • pumps • tanks.

Pipe specifications may include:	• length
	• dimension
	• pap size
	• thread
	• material, including:
	  • black steel
	  • galvanised
	  • hot dip galvanised
	• flange.

Unit Sector(s)

Unit sector	Fire systems design

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Co-requisite units

Co-requisite units	Nil

Competency field

Competency field	

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CPCSFS5011A Provide design documentation and review and support fire system installation processes

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency specifies the outcomes required to develop detailed drawings and notes for the fire systems installation team from approved detailed fire systems design drawings. The unit also covers the outcomes required to assist and support the installation team when changes to detailed designs may be required owing to contingencies encountered on-site. Licensing, legislative, regulatory or certification requirements may apply to this unit and so the varying state or territory requirements should be confirmed with the relevant body.

Application of the Unit

Application of the unit	This unit of competency supports the role of fire systems' designers whose work involves the preparation of detailed documentation to support the installation of fire systems and the provision of trouble-shooting advice and drawings for solutions to on-site issues. Fire systems designs are limited to those within the deemed-to-satisfy provisions of the Building Code of Australia or detailed fire systems designs for alternative solutions designed by fire engineers. This unit does not apply to fire systems for special hazard locations.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units	Nil

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Produce installation drawings and documentation.	1.1. Approved detailed design drawings of fire systems are checked to ensure that ***installation implications*** of required changes have been addressed. 1.2. Approved detailed design drawings of fire systems are used to create installation drawings. 1.3. Detailed design specifications of fire systems are used to notate the installation drawings with the location of specific components of the fire system.
2. Review drawings prior to installation.	2.1. Ongoing changes to detailed structural or other services' design drawings are regularly ***monitored*** and recorded. 2.2. The impact of structural and other services design changes on fire systems design and installation is considered and appropriate solutions are proposed and negotiated with relevant project team members, as required. 2.3. Fire systems installation drawings and documentation are amended to incorporate accepted solutions according to workplace and project procedures.
3. Resolve on-site installation problems.	3.1. Notifications of ***on-site installation issues*** are recorded, prioritised and considered in line with project timeframes. 3.2. Appropriate solutions are proposed and negotiated with relevant project team members, as required. 3.3. Fire systems installation drawings and documentation are amended to incorporate accepted solutions. 3.4. Solutions are communicated to on-site fire system installation team members and amended documentation is supplied according to workplace and project procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.

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REQUIRED SKILLS AND KNOWLEDGE

Required skills

- accurate measuring
- accurate naming and filing of drawings, including:
  - formal document control
  - formal amendments, including:
  - history
  - transmittal notices
- editing and creating drawings, including:
  - layout
  - section
  - detail
  - external references
  - freezing layers
- parametric modelling of services coordination using proprietary software, such as Navis-Works or MEP-REVIT
- fluent detailed hand-drawing and sketching ability to convey information to on-site workers
- numeracy skills for performing relevant system calculations
- language and literacy skills for:
  - listening to and communicating clearly with colleagues, installers, suppliers and contractors
  - participating in meetings, such as negotiations with fire engineering consultant, architect, builder or other service contractors
  - letter writing, especially to formalise:
  - recognition of conflicts and errors on drawings supplied by other service contractors
  - agreements with other services, for example whichever service is fitted last must fit around existing services
  - reading and interpreting drawings, plans and specifications, including:
  - architectural
  - structural
  - mechanical
  - hydraulic
  - electrical
- developing constructive and cooperative working relationships with project team members, workplace colleagues, suppliers, installers and clients
- negotiation and conflict management
- initiating and running meetings with lead contractor and other service contractors
- organising own work, including creating personal systems and checklists for

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REQUIRED SKILLS AND KNOWLEDGE
planning, managing and checking work • lateral thinking and problem solving • maintaining concentration, focus and attention to detail for long periods • managing detailed input to concurrent fire systems design projects at different stages of the process and with diverse sets of regulatory requirements
Required knowledge

• workplace design tools and processes
• level of accuracy required in detailed design drawings
• naming conventions for design drawings and drawing register
• fire science, including:
  • fire behaviour and dynamics
  • impact of fire on structures and materials
  • products of combustion
  • fire control strategies
  • fire retardants
  • fire detection technologies
  • fire suppression technologies
  • fire containment
• parametric modelling software, such as Navis-Works or MEP-REVIT
• computer software functions and operation, including:
  • word processing
  • spreadsheet
  • email
  • internet
  • proprietary project management software
• relevant current legislation, codes and standards, including:
  • building Acts
  • building regulations
  • infrastructure supply regulations
  • the Building Code of Australia
  • Australian standards for fire systems
  • international standards for fire systems
  • other fire system standards commonly required by building insurers
• protection requirements for different buildings
• fire systems' technology and components, such as:
  • water-based systems, including:
  • wet pipe sprinkler systems
  • deluge and drencher systems

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REQUIRED SKILLS AND KNOWLEDGE
• dry pipe sprinkler systems • pre-action sprinkler systems • early suppression fast response (ESFR) • hydrants, hose reels and monitors • water supply tanks • fire pump sets • detection and warning systems, including: • emergency warning and intercommunications systems (EWIS) • fire detection and alarm systems • smoke control systems • emergency lighting systems • purpose and operation of fire systems, including: • layout • special products and hazards • system operation • performance requirements • maintenance standards • system activation and operation • characteristics and limitations of products and materials used in fire systems and issues relating to material compatibility • interconnection of fire systems, including: • cause and effect matrix • interface with other services • passive fire safety elements: • identification of passive elements • impact of fire systems design on passive elements • specifications required to safeguard integrity of passive fire element performance where penetrations are necessitated by the fire systems design • basic principles of structural engineering • characteristics of building materials • construction industry terminology • roles and responsibilities of relevant building project personnel, including: • architect • lead contractor • mechanical engineer • hydraulic engineer • electrical engineer • on-site issues that can arise during the construction phase and impose changes to the designs of fire systems and other services

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REQUIRED SKILLS AND KNOWLEDGE

• installation methods, including:
  • access requirements
  • health and safety requirements
• sustainability requirements and ratings, including:
  • energy conservation
  • water conservation
• mathematic principles, equations and calculation methods relevant to the system type

Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that the simulated or project-based assessment fully replicates workplace conditions, materials, activities, responsibilities and procedures. This unit could be assessed as an activity involving the preparation of accurate documentation and provision of ongoing support for the installation of fire systems in a range of projects and buildings.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the required skills and knowledge specified within this unit.
	In particular the person should demonstrate:
	• the ability to:
	  • read and interpret a range of design drawings
	  • create, manipulate, save, file and share design drawings
	• an understanding of technical issues impacting

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EVIDENCE GUIDE	

	on the installation of fire systems
	• high-level communication skills to interact with on-site installers, and other service contractors and consultants
	• an understanding of the relevant regulatory approval and fire systems design certification processes
	• the ability to problem-solve and negotiate to produce appropriate design solutions for issues and contingencies encountered at the installation phase of a range of fire systems in different buildings, including:
	  • low-rise buildings
	  • medium-rise buildings
	  • high-rise buildings (over 25 metres)
	  • buildings over 45 metres in height.

Context of and specific resources for assessment	Assessment of essential underpinning knowledge may be conducted in an off-site context. It is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • design briefs, drawings, plans and specifications • copies of codes, standards, legislation and regulatory requirements • access to information and communications technology - hardware and software • access to manufacturer's information regarding fittings and components.
Method of assessment	Assessment must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to

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EVIDENCE GUIDE	
	be transferred to other circumstances and environments.
Guidance information for assessment	Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Installation implications may include:	• on-site health and safety risks, such as:
	  • manual handling
	  • confined spaces
	  • working at height
	• constraints relating to access, such as:
	  • height of pipe
	  • length of pipe
	  • distance from beams
	  • distance from walls.

Monitoring project drawings and documentation may involve:	• regular review of project management software tools and systems • regular review of emails • telephone communication with project team, including: • architect

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RANGE STATEMENT	
	• lead contractor • other service contractors.

On-site installation issues may include:	• discrepancies between designed and actual structure
	• discrepancies between designed and actual systems for other services, including:
	  • mechanical
	  • hydraulic
	  • electrical
	• errors in supplied materials and components
	• scheduling and sequencing changes
	• problems with access to installation locations of fire system components.

Unit Sector(s)

Unit sector	Fire systems design

Co-requisite units

Co-requisite units	Nil

Competency field

Competency field	

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CPCSFS5013A Support commissioning processes and finalise fire systems design projects

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency specifies the outcomes required to confirm the post-installation details of fire systems and produce amended drawings and documentation, and to prepare detailed commissioning procedures and specifications. The unit also covers reviewing issues and solutions arising during fire systems design projects and making subsequent improvements to fire systems design project processes. Licensing, legislative, regulatory or certification requirements may apply to this unit and so the varying state or territory requirements should be confirmed with the relevant body.

Application of the Unit

Application of the unit	This unit of competency supports the role of fire systems' designers with responsibility for producing 'as built' drawings, block plans, tactical fire plans, and operations and maintenance manuals for fire systems. Fire systems designs are limited to those within the deemed-to-satisfy provisions of the Building Code of Australia or detailed fire systems designs for alternative solutions designed by fire engineers. This unit does not apply to fire systems for special hazard locations.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units	Nil

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Produce accurate final drawings for fire systems.	1.1. Progressive changes to fire systems design drawings resulting from construction phase issues are documented according to workplace and project procedures. 1.2. Site visits are conducted, if possible, to confirm and record final component sizes, locations and building dimensions. 1.3. Accurate 'as built' drawings are prepared, named, notated, filed and submitted according to workplace procedures and project requirements. 1.4. Appropriate block plans and tactical fire plans are produced as required.
2. Prepare commissioning details, and operation and maintenance manuals for fire systems.	2.1. ***System performance requirements*** and ***commissioning procedures and specifications*** are prepared according to workplace and project requirements. 2.2. ***Standard operating procedures*** for the fire system are prepared based on relevant ***codes and standards*** and component manufacturer's recommendations. 2.3. ***Regular maintenance procedures*** for the fire system are produced based on component manufacturer's recommendations and relevant regulatory requirements. 2.4. Operation and maintenance ***signage*** is installed, as required according to relevant workplace, project and regulatory requirements.
3. Review and evaluate the fire systems design process.	3.1. Project documentation is reviewed and processed, and issues that arose and their solutions are noted. 3.2. Project issues and solutions are discussed with relevant workplace personnel and process improvement strategies are explored. 3.3. Project planning, methodologies and quality assurance systems are amended to incorporate agreed process improvement strategies.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- accurate measuring
- accurate naming and filing of drawings, including:
    - formal document control
    - formal amendments, including:
    - history
    - transmittal notices
- editing and creating drawings, including:
    - layout
    - section
    - detail
    - external references
    - freezing layers
- operating computer software packages and systems, including:
    - word processing
    - spreadsheet
    - email
    - internet
    - proprietary project management software
- language and literacy skills for:
    - listening to and communicating clearly with colleagues, installers, suppliers and contractors
    - letter writing, especially to formalise:
    - recognition of conflicts and errors on drawings supplied by other service contractors
    - agreements with other services, for example whichever service is fitted last must fit around existing services
    - reading and interpreting drawings, plans and specifications, including:
    - architectural
    - structural
    - mechanical
    - hydraulic
    - electrical
- developing constructive and cooperative working relationships with project team members, workplace colleagues, suppliers, installers and clients
- initiating and running meetings with lead contractor and other service contractors
- organising own work, including creating personal systems and checklists for

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REQUIRED SKILLS AND KNOWLEDGE
planning, managing and checking work • lateral thinking and problem solving • maintaining concentration, focus and attention to detail for long periods • managing detailed input to concurrent fire systems design projects at different stages of the process and with diverse sets of regulatory requirements
Required knowledge

• workplace design tools and processes
• level of accuracy required in detailed design drawings
• naming conventions for design drawings and drawing register
• fire science, including:
  • fire behaviour and dynamics
  • impact of fire on structures and materials
  • products of combustion
  • fire control strategies
  • fire retardants
  • fire detection technologies
  • fire suppression technologies
  • fire containment
• computer software functions and operation, including:
  • word processing
  • spreadsheet
  • email
  • internet
  • proprietary project management software
• relevant current legislation, codes and standards, including:
  • building Acts
  • building regulations
  • infrastructure supply regulations
  • the Building Code of Australia
  • Australian standards for fire systems
  • international standards for fire systems
  • other fire system standards commonly required by building insurers
• protection requirements for different buildings
• fire systems' technology and components, including:
  • water-based systems, including:
  • wet pipe sprinkler systems
  • deluge and drencher systems
  • dry pipe sprinkler systems

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REQUIRED SKILLS AND KNOWLEDGE
• pre-action sprinkler systems • early suppression fast response (ESFR) • hydrants, hose reels and monitors • water supply tanks • fire pump sets • detection and warning systems, including: • emergency warning and intercommunications systems (EWIS) • fire detection and alarm systems • smoke control systems • emergency lighting systems • purpose and operation of fire systems, including: • layout • special products and hazards • system operation • performance requirements • maintenance standards • system activation and operation • passive fire safety elements: • identification of passive elements • impact of fire systems design on passive elements • specifications required to safeguard integrity of passive fire element performance where penetrations are necessitated by the fire systems design • characteristics and limitations of products and materials used in fire systems and issues relating to material compatibility • interconnection of fire systems, including: • cause and effect matrix • interface with other services • instruments used in commissioning and measuring fire system performance • basic principles of structural engineering • characteristics of building materials • construction industry terminology • roles and responsibilities of relevant building project personnel, including: • architect • lead contractor • mechanical engineer • hydraulic engineer • electrical engineer • contractual processes

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that the simulated or project-based assessment fully replicates workplace conditions, materials, activities, responsibilities and procedures. This unit could be assessed as an activity involving the preparation of final fire systems design project documentation, including drawings, specifications and commissioning support documentation. The activity should also include the review of project processes and outcomes to inform continuous improvement strategies.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the required skills and knowledge specified within this unit.
	
	In particular the person should demonstrate:
	• the ability to:
	  • produce final 'as installed' drawings for fire systems design projects
	  • save, file and share design drawings
	• an understanding of relevant regulatory approval and fire systems design certification processes
	• the ability to identify, interpret and apply relevant current legislation, codes, standards and regulatory requirements impacting on the finalisation of fire systems design projects, including commissioning procedures and certification
	• the ability to review project processes and outcomes for a range of fire systems design projects, including low-rise, medium-rise,

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EVIDENCE GUIDE	
	high-rise (over 25 metres) and buildings over 45 metres in height, and identify and discuss opportunities for learning and process improvement • the ability to incorporate learning and agreed process improvements into planning and methodologies for a range of fire systems design projects.
Context of and specific resources for assessment	Assessment of essential underpinning knowledge may be conducted in an off-site context. It is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • design and installation drawings, plans and specifications • copies of codes, standards, legislation and regulatory requirements • access to information and communications technology - hardware and software.
Method of assessment	Assessment must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments.
Guidance information for assessment	Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in

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EVIDENCE GUIDE	
	relation to the competency being assessed.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

System performance requirements may include:	• for water-based systems:
	  • speed of response
	  • time taken to reach full-flow conditions
	  • area of coverage
	  • nozzle locations
	  • droplet profile and characteristics
	  • duration of response
	• for detection and warning systems:
	  • correct sensors
	  • sensitivity to fire size
	  • speed of detection and response
	  • fire location coverage.

Commissioning procedures and specifications may include:	• procedures listed in Australian standards, such as:
	  • AS2118.1-2006 Section 15
	  • AS1670.1-2004 Section 7
	  • AS2118 Automatic fire sprinkler systems
	  • AS2419 Fire hydrant installations
	  • U.S. National Fire Protection Association (NFPA) codes
	• material safety data sheets (MSDS)
	• manufacturer recommendations.

Standard operating procedures may include:	• site-specific workplace standard operating procedures

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RANGE STATEMENT	
	• work method statements • job safety advice • quality assurance documentation.
Codes and standards may include:	• the Building Code of Australia • current relevant Australian standards for fire systems • current relevant international standards for fire systems • codes and standards stipulated by the building insurer.

Regular maintenance procedures may include:	• site-specific maintenance instructions
	• manufacturer's specific maintenance instructions
	• local government regulations, such as:
	  • part 59, South Australia
	• Australian standards, such as:
	  • AS1851-2005
	• material safety data sheets (MSDS).

Signage may include:	• technical design data, including systems performance and layout on a block plan
	• pressure switch setting plaque
	• interface cause and effect drawing
	• operating instructions
	• manufacturer's technical plates or labels
	• signs in the pump room for water-based systems, including:
	  • system pressure
	  • town mains pressure
	  • pump cut-in pressure
	  • pressure gauge schedule
	  • block plans
	• signage for detection and warning systems, including:
	  • system interface matrix
	  • block plans
	  • device lists.

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Unit Sector(s)

Unit sector	Fire systems design

Co-requisite units

Co-requisite units	Nil

Competency field

Competency field	

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CPCSFS5014A Conduct annual fire systems certification inspections

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency specifies the outcomes required to assess all types of fire systems in all types of buildings to ensure that the systems comply with applicable legislation and will perform in the event of a fire. Licensing, legislative, regulatory or certification requirements may apply to this unit and so the varying state or territory requirements should be confirmed with the relevant body.

Application of the Unit

Application of the unit	This unit of competency supports the role of annual certifiers of fire systems with responsibility for inspecting existing fire systems; assessing their compliance with the relevant applicable legislation, codes and standards; and advising whether they continue to perform to current fire safety standards.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units	Nil

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for annual fire systems certification inspections.	1.1. Annual ***fire systems*** inspections are scheduled in a timely manner and in consultation with ***relevant stakeholders***, as required. 1.2. Current building plans are obtained and reviewed and modifications made to the building since the last inspection are identified and noted. 1.3. Information regarding the ***current and historical legislation***, ***codes and standards*** applicable to fire systems is reviewed and used to inform inspection planning. 1.4. Information regarding the validity of fire systems' ***compliance documentation*** is reviewed and used to inform inspection planning. 1.5. Fire systems certification inspections are planned to ensure efficient and comprehensive implementation.
2. Conduct annual fire systems certification inspections.	2.1. Fire systems are inspected concurrently in each area of the building in accordance with organisational and regulatory requirements. 2.2. Each aspect of each fire system is assessed for compliance with the applicable current and historical legislation, codes and standards and findings are documented. 2.3. The current performance level of each fire system is assessed and recorded. 2.4. Advice is sought from ***relevant professional personnel***, as required and according to workplace and regulatory procedures.
3. Produce annual fire systems certification reports and communicate findings.	3.1. The findings of inspections are analysed and works required to address shortfalls in fire systems' compliance or performance are identified and recorded according to regulatory requirements. 3.2. Reports and certificates are produced and processed according to regulatory requirements. 3.3. The findings of the report are communicated to relevant stakeholders according to regulatory requirements, and works required to rectify fire systems are carefully explained.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- operating computer software packages and systems, including:
  - word processing
  - spreadsheet
  - email
  - internet
  - proprietary project management software
- language and literacy skills for:
  - listening to and communicating clearly with stakeholders, colleagues and contractors
  - explaining the gravity of fire systems inspection findings to owner
  - researching, accessing, reading, interpreting and applying relevant current and historical legislation, codes and standards
  - letter writing
  - updating knowledge of products, software systems and technology
  - reading and interpreting drawings, plans and specifications, including:
  - architectural
  - structural
  - fire systems design
  - block plans
  - tactical fire plans
  - report writing
- developing constructive and cooperative working relationships with stakeholders, colleagues and clients
- negotiation and conflict management
- organising own work, including creating personal systems and checklists for planning, managing and checking work
- inspecting multiple fire systems (with different applicable standards) concurrently, including:
  - attention to detail
  - visual acuity to perceive, for example that the distance between sprinklers is too great
- maintaining a professional detached authority

Required knowledge

- auditing processes and protocols

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REQUIRED SKILLS AND KNOWLEDGE

• fire science, including:
  • fire behaviour and dynamics
  • impact of fire on structures and materials
  • products of combustion
  • fire control strategies
  • fire retardants
  • fire detection technologies
  • fire suppression technologies
  • fire containment
• fire engineering principles, including:
  • engineered solutions
  • innovative fire systems
  • fire modelling
• computer software functions and operation, including:
  • word processing
  • spreadsheet
  • email
  • internet
  • proprietary project management software
• relevant current and historical legislation, codes and standards, including:
  • building Acts
  • building regulations
  • infrastructure supply regulations
  • the Building Code of Australia
  • Australian standards for fire systems
  • international standards for fire systems
  • other fire system standards commonly required by building insurers
• protection requirements for different buildings
• fire systems' technology and components, including:
  • water-based systems, including:
  • wet pipe sprinkler systems
  • deluge and drencher systems
  • dry pipe sprinkler systems
  • pre-action sprinkler systems
  • early suppression fast response (ESFR)
  • hydrants, hose reels and monitors
  • water supply tanks
  • fire pump sets

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REQUIRED SKILLS AND KNOWLEDGE

• detection and warning systems, including:
  • emergency warning and intercommunications systems (EWIS)
  • fire detection and alarm systems
  • smoke control systems
  • emergency lighting systems
  • special hazard fire systems, including:
  • foam systems (low expansion, medium expansion and high expansion)
  • gaseous agent systems (carbon dioxide, inert gas and halocarbon gases)
  • water spray systems (deluge, medium/high velocity water spray and high speed deluge)
  • chemical powder systems
  • wet chemical systems
• characteristics and limitations of products and materials used in fire systems and issues relating to material compatibility
• interconnection of fire systems, including:
  • cause and effect matrix
  • interface with other services
• passive fire safety elements:
  • identification of passive elements
  • requirements for safeguarding the integrity of passive fire element performance where penetrations have been made
• basic principles of structural engineering
• characteristics of building materials
• construction industry terminology
• sustainability requirements and ratings, including:
  • energy conservation
  • water conservation
• human psychology, especially fire avoidance behaviour
• contractual processes

Evidence Guide

EVIDENCE GUIDE
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

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EVIDENCE GUIDE	
Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that the simulated or project-based assessment fully replicates workplace conditions, materials, activities, responsibilities and procedures. This unit could be assessed as an activity involving preparing for, conducting and reporting on annual fire systems inspections for a range of types of fire systems in a variety of buildings with different construction and modification histories.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the required skills and knowledge specified within this unit.
	
	In particular the person should demonstrate:
	
	• an understanding of the range of relevant current and historical legislation, codes, standards and regulatory requirements for the certification of existing fire systems
	• an understanding of the function and operation of the full range of fire systems, including water-based fire systems, detection and warning systems and special hazard fire systems used in a wide variety of types of buildings, including:
	  • low-rise buildings
	  • medium-rise buildings
	  • high-rise buildings (over 25 metres)
	  • buildings over 45 metres in height
	• the ability to apply the relevant current and historical compliance requirements to annual inspections of a range of fire systems installed and modified at different dates, in a variety of types of buildings
	• the visual acuity required to perceive anomalies in fire systems' compliance arising from building modifications, repairs or adjustments; or a lack of fire systems maintenance
	• the ability to report and communicate findings effectively to ensure that the

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EVIDENCE GUIDE	
	gravity of non-compliance of fire systems is understood and works required to remedy the situation may be expedited.
Context of and specific resources for assessment	Assessment of essential underpinning knowledge may be conducted in an off-site context. It is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • documents, drawings, plans and specifications • copies of codes, standards, legislation and regulatory requirements • access to information and communications technology - hardware and software.
Method of assessment	Assessment must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments.
Guidance information for assessment	Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Fire systems may include:	• water-based systems, including:
	  • wet pipe sprinkler systems
	  • deluge and drencher systems
	  • dry pipe sprinkler systems
	  • pre-action sprinkler systems
	  • early suppression fast response (ESFR)
	  • hydrants, hose reels and monitors
	  • water supply tanks
	  • fire pump sets
	• detection and warning systems, including:
	  • emergency warning and intercommunications systems (EWIS)
	  • fire detection and alarm systems
	  • smoke control systems
	  • emergency lighting systems
	• special hazard fire systems, including:
	  • foam systems (low expansion, medium expansion and high expansion)
	  • gaseous agent systems (carbon dioxide, inert gas and halocarbon gases)
	  • water spray systems (deluge, medium/high velocity water spray and high speed deluge)
	  • chemical systems, including:
	  • powder
	  • wet chemical.

Relevant stakeholders may include:	• owners • agents • occupants • local authority.
Current and historical legislation, codes and standards	• current, or earlier versions of: • the Building Code of Australia

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RANGE STATEMENT	
may include:	• relevant Australian standards for fire systems • relevant international standards for fire systems • codes and standards stipulated by the regulatory authority or building insurer • obsolete legislation, regulations, codes and standards.
Compliance documentation may include:	• fire safety schedules • inspection and testing logbooks • maintenance, repair and replacement documentation.
Relevant professional personnel may include:	• fire engineer • fire brigade personnel • building surveyor • persons with regulatory authority • architect • structural engineer • fire systems' designer.

Unit Sector(s)

Unit sector	Fire systems design

Co-requisite units

Co-requisite units	Nil

Competency field

Competency field	

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CPCSFS5015A Assess documentation for annual fire systems certification inspections

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency specifies the outcomes required to research the applicable regulatory requirements for existing fire systems in all types of buildings, and assess compliance documentation to determine whether requirements are met. Licensing, legislative, regulatory or certification requirements may apply to this unit and so the varying state or territory requirements should be confirmed with the relevant body.

Application of the Unit

Application of the unit	This unit of competency supports the role of annual certifiers of fire systems with responsibility for determining which legislation, codes and standards apply to particular existing fire systems and assessing the documentation of regular fire safety inspection, testing and maintenance activities.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units	Nil

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine the installation dates for fire systems.	1.1. The construction dates and modification histories of buildings to be inspected are accessed, interpreted and noted. 1.2. The types of ***fire systems*** installed in buildings to be inspected are identified from ***compliance documentation***. 1.3. The installation dates for individual fire systems in buildings to be inspected are identified.
2. Research and interpret the applicable codes and standards.	2.1. The ***current and historical legislation***, ***codes and standards*** applicable to individual fire systems at the time of installation, or modification of the building are researched and identified. 2.2. The detailed requirements of applicable historical legislation, codes and standards are researched and interpreted. 2.3. Any disparity between historical legislation, codes and standards applicable at the installation or modification date and current fire safety requirements are noted and reported to ***relevant stakeholders***. 2.4. Checklists and notes on applicable current and historical codes and standards are prepared to assist the annual inspection process.
3. Assess and report on fire system compliance documentation.	3.1. Schedules for the inspection, testing and maintenance of fire safety systems are reviewed and checked for compliance with current regulatory requirements. 3.2. Documentation for regular fire systems inspection and testing activities is reviewed and checked for currency and completeness. 3.3. Information regarding non-compliance issues and defects is identified and noted. 3.4. Documentary evidence of resolution of non-compliance issues and defects is requested and reviewed, if available. 3.5. Checklists and notes on non-compliance issues and defects identified from compliance documentation are prepared to assist the annual inspection process. 3.6. Reports detailing anomalies and omissions in fire systems' compliance documentation are prepared and processed according to workplace and regulatory

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ELEMENT	PERFORMANCE CRITERIA
	requirements.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills

• operating computer software packages and systems, including:
  • word processing
  • spreadsheet
  • email
  • internet
  • design and drawing software
  • proprietary project management and project scheduling software
• language and literacy skills for:
  • listening to and communicating clearly with stakeholders, colleagues and contractors
  • explaining gravity of fire systems inspection findings to owner
  • researching, accessing, reading, interpreting and applying relevant current and historical legislation, codes and standards
  • letter writing
  • updating knowledge of products, software systems and technology
  • reading and interpreting drawings, including:
  • architectural
  • structural
  • mechanical
  • hydraulic
  • electrical
  • report writing
• developing constructive and cooperative working relationships with stakeholders, colleagues and clients
• negotiation and conflict management
• organising own work, including creating personal systems and checklists for planning, managing and checking work

Required knowledge

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REQUIRED SKILLS AND KNOWLEDGE

• fire science, including:
  • fire behaviour and dynamics
  • impact of fire on structures and materials
  • products of combustion
  • fire control strategies
  • fire retardants
  • fire detection technologies
  • fire suppression technologies
  • fire containment
• fire engineering principles, including:
  • engineered solutions
  • innovative fire systems
  • fire modelling
• computer software functions and operation, including relevant proprietary software
• relevant current and historical legislation, codes and standards, including:
  • building Acts
  • building regulations
  • infrastructure supply regulations
  • the Building Code of Australia
  • Australian standards for fire systems
  • international standards for fire systems
  • other fire system standards commonly required by building insurers
• protection requirements for different buildings
• fire systems' technology and components, including:
  • water-based systems, including:
  • wet pipe sprinkler systems
  • deluge and drencher systems
  • dry pipe sprinkler systems
  • pre-action sprinkler systems
  • early suppression fast response (ESFR)
  • hydrants, hose reels and monitors
  • water supply tanks
  • fire pump sets
  • detection and warning systems, including:
  • emergency warning and intercommunications systems (EWIS)
  • fire detection and alarm systems
  • smoke control systems
  • emergency lighting systems

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REQUIRED SKILLS AND KNOWLEDGE

• special hazard fire systems, including:
  • foam systems (low expansion, medium expansion and high expansion)
  • gaseous agent systems (carbon dioxide, inert gas and halocarbon gases)
  • water spray systems (deluge, medium/high velocity water spray and high speed deluge)
  • chemical powder systems
  • wet chemical systems
• characteristics and limitations of products and materials used in fire systems and issues relating to material compatibility
• interconnection of fire systems, including:
  • cause and effect matrix
  • interface with other services
• passive fire safety elements:
  • identification of passive elements
  • requirements for safeguarding the integrity of passive fire element performance where penetrations have been made
• basic principles of structural engineering
• characteristics of building materials
• construction industry terminology
• sustainability requirements and ratings, including:
  • energy conservation
  • water conservation
• human psychology, especially fire avoidance behaviour
• contractual processes

Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that the simulated or project-based assessment fully replicates workplace conditions, materials, activities, responsibilities and procedures.

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EVIDENCE GUIDE	
	This unit could be assessed as an activity involving the establishment of the legislation, codes and standards that apply to existing fire systems in a range of buildings. The activity should include assessment of the compliance of fire safety schedules and inspection, testing and maintenance documentation.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the required skills and knowledge specified within this unit.
	In particular the person should demonstrate:
	• a comprehensive understanding of the range of relevant current and historical legislation, codes, standards and regulatory requirements for the certification of existing fire systems
	• an understanding of the function and operation of the full range of fire systems, including water-based fire systems, detection and warning systems and special hazard fire systems used in a wide variety of types of buildings, including:
	  • low-rise buildings
	  • medium-rise buildings
	  • high-rise buildings (over 25 metres)
	  • buildings over 45 metres in height
	• the ability to research and identify the applicable current and historical compliance requirements for a range of fire systems installed and modified at different dates, in a variety of types of buildings
	• the ability to assess fire safety schedules and inspection and testing documentation for currency and completeness
	• the ability to identify and report on anomalies and omissions in fire safety compliance documentation
	• the ability to produce checklists and notes regarding issues of particular interest found in fire safety documentation, to assist annual inspection processes.

Context of and specific	Assessment of essential underpinning knowledge

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EVIDENCE GUIDE	
resources for assessment	may be conducted in an off-site context. It is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • documents, drawings, plans and specifications • copies of codes, standards, legislation and regulatory requirements • access to information and communications technology - hardware and software.
Method of assessment	Assessment must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments.
Guidance information for assessment	Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

RANGE STATEMENT
The range statement relates to the unit of competency as a whole. It allows for different

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RANGE STATEMENT	
work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Fire systems may include:	• water-based systems, including:
	  • wet pipe sprinkler systems
	  • deluge and drencher systems
	  • dry pipe sprinkler systems
	  • pre-action sprinkler systems
	  • early suppression fast response (ESFR)
	  • hydrants, hose reels and monitors
	  • water supply tanks
	  • fire pump sets
	• detection and warning systems, including:
	  • emergency warning and intercommunications systems (EWIS)
	  • fire detection and alarm systems
	  • smoke control systems
	  • emergency lighting systems
	• special hazard fire systems, including:
	  • foam systems (low expansion, medium expansion and high expansion)
	  • gaseous agent systems (carbon dioxide, inert gas and halocarbon gases)
	  • water spray systems (deluge, medium/high velocity water spray and high speed deluge)
	  • chemical systems, including:
	  • powder
	  • wet chemical.

Compliance documentation may include:	• fire safety schedules • inspection and testing logbooks • maintenance, repair and replacement documentation.

Current and historical legislation, codes and standards may include:	• current, or earlier versions of:
	  • the Building Code of Australia
	  • relevant Australian standards for fire systems

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RANGE STATEMENT	
	• relevant international standards for fire systems • codes and standards stipulated by the regulatory authority or building insurer • obsolete legislation, regulations, codes and standards.
Relevant stakeholders may include:	• owners • agents • occupants • local authority.

Unit Sector(s)

Unit sector	Fire systems design

Co-requisite units

Co-requisite units	Nil

Competency field

Competency field	

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CPCSFS7001A Define scope of and initiate special hazard fire systems design projects

Modification History

Not Applicable

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Unit Descriptor

Unit descriptor	This unit of competency specifies the outcomes required to define the scope of a project to design a complex special hazard fire system and put in place mechanisms to support the design work. The unit addresses the careful clarification of the special hazards project's scope, including an assessment of the level of risk attached to the equipment or facility for which the fire system is being designed, and the development of fire risk solutions. The unit covers the conduct of a thorough analysis of any relevant standards as well as of the project brief itself. Processes to guide and manage the special hazard fire systems design project are also covered. The development of a fire systems design project is subject to significant complexities due to the typical requirement to integrate multiple fire suppression and detection systems. Special hazard fire systems include gaseous, foam and water spray solutions which offer protection for life safety, and to facilities and equipment vital to business operation and success. Special hazard fire systems may fall outside the ambit of the Building Code of Australia. Client requirements may specify use of the U.S. National Fire Protection Association (NFPA) standards. Licensing, legislative, regulatory or certification requirements may apply to this unit and so the varying state or territory requirements should be confirmed with the relevant body.

Application of the Unit

Application of the unit	This unit of competency supports the attainment of skills and knowledge necessary for the effective and efficient scoping of special hazard fire suppression and detection systems in preparation for the technical development of the design.

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Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units	Nil

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish relevant project management details.	1.1. Project management roles, responsibilities and lines of communication are established. 1.2. Required project outcomes are consulted, clarified and finalised with the client. 1.3. Relevant project scheduling and sequencing information is established. 1.4. Tasks in the design process are assigned to relevant personnel, and mechanisms to coordinate their input are established and communicated. 1.5. Project file-sharing and communication systems and tools are determined. 1.6. Workplace quality assurance checks to ensure accuracy and validity of design are determined and procedures to ensure that these are conducted are established. 1.7. Stages where regulatory or other approval is required for the design are determined and procedures to ensure that these are obtained are established.
2. Interpret fire systems design concepts, briefs or specifications.	2.1. The nature and purpose of the ***fire systems design*** are determined. 2.2. ***Project documentation*** is gathered and assessed for completeness and use in the design of effective special hazard fire systems. 2.3. ***Structural characteristics*** of the ***equipment or facility*** are identified and analysed. 2.4. Functions and occupancies of buildings or facilities are determined from initial project documentation. 2.5. Clarification of specific building details is sought from the client or relevant contractors and consultants. 2.6. The appropriate hazard classification for the building or facility is researched and confirmed.
3. Complete the risk assessment of the project.	3.1. ***Regulatory requirements and applicable standards*** for the special hazard fire system are determined. 3.2. Insurance requirements impacting on applicable codes and standards for the special hazard fire system project are determined. 3.3. A risk assessment is documented to identify or confirm the type or types of special hazard detection

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ELEMENT	PERFORMANCE CRITERIA
	and suppression system that will be used.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills

- accurate measuring
- accurate naming and filing of drawings, including:
  - formal document control
  - formal amendments, including:
  - history
  - transmittal notices
- editing and creating drawings, including:
  - layout
  - section
  - detail
  - external references
  - freezing layers
- fluent detailed hand-drawing and sketching ability to convey information to on-site workers
- operating computer software packages and systems, including:
  - word processing
  - spreadsheet
  - email
  - internet
  - proprietary project management software
  - proprietary hydraulic calculation software
  - proprietary estimating software
  - parametric modelling software
- using BASIC computer programming language to write logic for electronic system interfaces
- numeracy skills for:
  - calculating:
  - dimensions

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REQUIRED SKILLS AND KNOWLEDGE
• pipe lengths • piping friction loss • pump capacity • motor output • performing calculations for electrical systems: • voltage drops • battery capacity • battery back-up • power supplies • performing fluid mechanic calculations • language and literacy skills for: • listening to and communicating clearly with colleagues, fitters, suppliers and contractors • participating in meetings, such as negotiations with fire engineering consultant, architect, builder or other service contractor • researching, accessing, reading, interpreting and applying current relevant legislation, codes and standards • letter writing, especially to formalise: • recognition of conflicts and errors on drawings supplied by other service contractors • agreements with other services, for example whichever service is fitted last must fit around existing services • reading and interpreting drawings, including: • architectural • structural • mechanical • hydraulic • electrical • report writing • developing constructive and cooperative working relationships with project team members, workplace colleagues, suppliers, fitters and clients • negotiation and conflict management • initiating and running meetings with lead contractor and other service contractors • project management • organising own work, including creating personal systems and checklists for planning, managing and checking work • lateral thinking and problem solving • maintaining concentration, focus and attention to detail for long periods • managing detailed input to concurrent fire systems design projects at different stages of the process and with diverse sets of regulatory requirements

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REQUIRED SKILLS AND KNOWLEDGE

Required knowledge

- workplace design tools and processes
- level of accuracy required in detailed design drawings
- naming conventions for design drawings and drawing register
- fire science, including:
  - fire behaviour and dynamics
  - impact of fire on structures and materials
  - products of combustion
  - fire control strategies
  - fire retardants
  - fire detection technologies
  - fire suppression technologies
  - fire containment
- fire engineering principles, including:
  - engineered solutions
  - innovative fire systems
  - fire modelling
- proprietary fire engineering and modelling programs
- parametric modelling of services coordination using proprietary software, such as Navis-Works or MEP-REVIT
- computer software functions and operation, including:
  - word processing
  - spreadsheet
  - email
  - internet
  - proprietary project management software
  - proprietary hydraulic calculation software
  - proprietary estimating software
- relevant current legislation, codes and standards, including:
  - building Acts
  - building regulations
  - infrastructure supply regulations
  - the Building Code of Australia
  - Australian standards for fire systems
  - other fire system standards commonly required by building insurers
- protection requirements for different buildings, including the existence of special zones, the egress requirements of occupants, and the construction materials used
- passive fire safety elements:

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REQUIRED SKILLS AND KNOWLEDGE
• identification of passive elements • impact of fire systems design on passive elements • specifications required to safeguard integrity of passive fire element performance where penetrations are necessitated by the fire systems design • fire systems' technology and components, including: • water-based systems, including: • wet pipe sprinkler systems • deluge and drencher systems • dry pipe sprinkler systems • pre-action sprinkler systems • early suppression fast response (ESFR) • hydrants, hose reels and monitors • water supply tanks • fire pump sets • detection and warning systems, including: • emergency warning and intercommunications systems (EWIS) • fire detection and alarm systems • smoke control systems • emergency lighting systems • special hazard fire systems, including: • foam systems (low expansion, medium expansion and high expansion) • gaseous agent systems (carbon dioxide, inert gas and halocarbon gases) • water spray systems (deluge, medium/high velocity water spray and high speed deluge) • chemical systems, including: • powder • wet chemical • purpose and operation of fire systems, including: • layout • special products and hazards • system operation • performance requirements • maintenance standards • system activation and operation • characteristics and limitations of products and materials used in fire systems and issues relating to material capability • interconnection of fire systems, including: • cause and effect matrix

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REQUIRED SKILLS AND KNOWLEDGE
• interface with other services • instruments used in commissioning and measuring fire system performance • basic principles of structural engineering • characteristics of building materials • construction industry terminology • roles and responsibilities of relevant building project personnel, including: • architect • lead contractor • mechanical engineer • hydraulic engineer • electrical engineer • on-site issues that can arise during the construction phase and impose changes to the designs of fire systems and other services • installation methods, including: • access requirements • health and safety requirements • water supplies, including: • common water sources • conservation requirements • in-ground reticulation • booster configurations • fluid mechanics and hydraulics relating to: • water supply • pressure • pump selection • tank selection • pressure vessels • pipe range • sustainability requirements and ratings, including: • energy conservation • water conservation • pipe fabrication methods and constraints • mathematic principles, equations and calculation methods, including: • financial calculations, for example to assess cost-effectiveness of fire systems • trigonometry, for example to amend dimensions of pipe allowing for fittings • flow calculations, including: • area of operations • discharge rates and quantities

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REQUIRED SKILLS AND KNOWLEDGE
• discharge times • pressure gain and loss • K-factors • pressure, temperature and volume relationship • Hazen-Williams equation • Darcy-Weisbach equation • computational fluid dynamics • electrical calculations (alarm systems), including: • voltage drops • battery sizes • battery back-up • power supplies • cabling range • system calculations for gas or special hazard fire systems • principles of organic and inorganic chemistry, including basic chemical reactions and substances • principles of basic physics, including an understanding of: • Boyle's Law • Charles' Law • Dalton's Law • Henry's Law • principles of thermodynamics, including: • effects of heat • stratification of gases • smoke and heat dynamics • electrical and electronics theory, including: • units used to measure current (AC and DC), power, capacitance, inductance and sound attenuation • effects of AC and DC current in series and parallel circuit paths that includes resistive, inductive and capacitive loads • relationship between voltage drops around a circuit and applied voltage • definition of voltage ratings as defined in communication and electrical safety regulations, including extra low voltage, low voltage and hazardous voltages • layout of electrical wiring systems to meet communication and electrical safety regulations applicable to fire detection and warning systems • basic operation of common electronic and electrical components used in fire detection and warning systems • basic operation of communication protocols on addressable systems,

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REQUIRED SKILLS AND KNOWLEDGE

peripheral devices (printers) and high-level interfaces to other communication devices used in fire detection and warning systems
• acoustics and speech intelligibility for occupant warning systems
• human psychology, especially fire avoidance behaviour
• organisational frameworks and functions, including:
  • industry associations
  • enterprises
  • government bodies
• financial management, including:
  • budgeting
  • cost-effectiveness
• contractual processes
• risk management processes

Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that the simulated or project-based assessment fully replicates workplace conditions, materials, activities, responsibilities and procedures. This unit could be assessed as an activity involving the determination of the scope of and initiation of a range of fire systems designs for special hazards projects. This entails establishing effective project management processes; correctly interpreting design concepts, briefs or specifications; and conducting risk management processes to ensure the selection of appropriate fire detection and suppression systems that reflect client requirements and are compliant with relevant codes, standards and legislation.
Critical aspects for assessment	A person who demonstrates competency in this

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EVIDENCE GUIDE	
and evidence required to demonstrate competency in this unit	unit must be able to provide evidence of the required skills and knowledge specified within this unit. In particular the person should demonstrate: • project management skills to coordinate, schedule, resource and oversee the completion of special hazard projects • the ability to read and interpret a range of design documents, including concept briefs, design briefs, drawings, plans and specifications • knowledge of fire sciences sufficient to ensure the design of compliant and effective systems that address the specific conditions of the projects being undertaken • an understanding of and ability to apply legislation, codes, standards, and regulatory and insurance requirements that may apply to special hazard fire systems design projects, including U.S. NFPA standards • the ability to conduct risk assessment processes.
Context of and specific resources for assessment	Assessment of essential underpinning knowledge may be conducted in an off-site context. It is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • access to Australian and international codes and standards • access to legislation relevant to the jurisdiction • project documentation, including design brief, design drawings, specifications, construction schedules and other supporting documents • research resources, including product information and data • theoretical texts and other information to support the assessment of the unit's required skills and knowledge • relevant computer software packages and suitable hardware.
Method of assessment	Assessment methods must:

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EVIDENCE GUIDE	
	• satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments.
Guidance information for assessment	Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Fire systems design projects:	• are defined as those projects that are developed as a fire risk solution to offer protection against business interruption by providing fire protection to specific equipment or facility, whose performance-based principles are often outside the ambit of the Building Code of

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RANGE STATEMENT	
	Australia • must respond to the requirements specified by the client or the client's insuring body and may include the application of international standards for fire systems.
Project documentation includes:	• fire engineer's design concepts and recommendations • construction drawings and plans • specific layout plans for other services, including plumbing, electrical and air conditioning.
Structural characteristics of the building or facility include:	• fabrication methods used • size and layout.
Equipment or facility that will require special hazard fire systems includes that which stores high value or high risk assets, including:	• data centres • computer rooms • electrical substations • documents (e.g. libraries and archives) and other collections (e.g. art galleries and museums) • fuel and gas storage and refineries • aeroplane hangars • chemical factories • warehouses containing highly volatile materials • any other storage facility for very high value individual items that would be destroyed by water-based fire suppression systems.

Regulatory requirements and applicable standards:	• will typically include references to U.S. NFPA standards, including:
	  • NFPA 2001 Clean Agent Fire Extinguishing Systems
	  • NFPA 11 Low, Medium and High Expansion Foam Systems
	  • NFPA 13 The Installation of Sprinkler Systems
	  • NFPA 15 Water Spray Fixed Systems for Fire Protection
	  • NFPA 16 Deluge Foam-Water Sprinkler and Foam-Water Spray Systems
	  • NFPA 750 Water Mist Fire Protection

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RANGE STATEMENT	

	Systems
	• relevant Australian standards, including:
	  • AS4214 Gaseous fire extinguishing systems
	  • AS2118 Automatic fire sprinkler systems Parts 1 to 6
	  • AS1670 Fire detection, warning control and intercom systemsSystem design, installation and commissioning
	  • AS1940 The storage and handling of flammable and combustible liquids
	  • AS4360 Risk management
	  • AS4587 Water mist fire protection systems
	• also note:
	  • increasingly, international ISO standards are being identified for the industry
	  • special hazard fire systems are not referenced in the Building Code of Australia.

Unit Sector(s)

Unit sector	Fire systems design

Co-requisite units

Co-requisite units	Nil

Competency field

Competency field	Senior management

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CPCSFS7002A Analyse, design and evaluate complex special hazard fire systems

Modification History

Not Applicable

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Unit Descriptor

Unit descriptor	This unit of competency specifies the outcomes required to analyse options for the design of special hazard fire systems, design their components, and evaluate the designs prior to sign-off by clients. Special hazard fire systems include gaseous, foam and water spray solutions which offer protection for life safety, and to facilities and equipment vital to business operation and success. Special hazard systems may fall outside the ambit of the Building Code of Australia. Client requirements may specify use of the U.S. National Fire Protection Association (NFPA) standards. The development of a fire systems design project is subject to significant complexities due to the typical requirement to integrate multiple fire suppression and detection systems. Licensing, legislative, regulatory or certification requirements may apply to this unit and so the varying state or territory requirements should be confirmed with the relevant body.

Application of the Unit

Application of the unit	This unit of competency supports the attainment of skills and knowledge necessary for the effective and efficient design of special hazard fire suppression and detection systems.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units	Nil

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Select appropriate special hazard fire suppression solutions.	1.1. Research is conducted to determine the appropriate ***fire suppression solutions*** to address the building or facility's ***risk profile*** and the ***special hazard standards*** that have been identified for use. 1.2. A cost-benefit and efficiency analysis of the range of fire suppression systems is conducted. 1.3. Recommendations for the selection of preferred solutions are made to the appropriate personnel.
2. Select appropriate special hazard fire detection and occupant warning solutions.	2.1. Research is conducted to determine the appropriate ***fire detection and occupant warning solutions*** to address the building or facility's risk profile, ambient conditions and the selected fire suppression solution. 2.2. A cost-benefit and efficiency analysis of the range of fire detection and warning systems is conducted. 2.3. Recommendations for the selection of preferred solutions are made to the appropriate personnel.
3. Set up special hazard fire systems design drawing.	3.1. Relevant ***project drawings and documentation*** are requested, received, named and filed according to workplace procedures. 3.2. Drawings are cleaned to leave minimal essential information. 3.3. Layers showing designs of other services are imported into clean architectural or structural drawings. 3.4. Details from drawings of floor or building adjacent to the areas under design consideration are added if these affect the design. 3.5. The detailed design drawing is named, filed and backed up according to workplace procedures.
4. Lay out the special hazard system design.	4.1. A site visit is conducted if possible to confirm dimensions and assess installation risks and constraints. 4.2. The ***interactions*** between the various systems are identified and planned. 4.3. The exact locations of sprinklers and other fittings are determined and notated on the drawing according to relevant codes and standards. 4.4. The most ***efficient and workable layout and location*** of ***system components*** are determined and notated on the drawing.

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ELEMENT	PERFORMANCE CRITERIA
	4.5. Dimensions are calculated, checked and notated on the drawing.
5. Calculate the requirements for the special hazard solutions.	5.1. ***Calculations*** to identify and confirm the required capacity of the special hazards systems are undertaken. 5.2. ***Infrastructure*** to support the special hazard solution is identified and quantified. 5.3. Shortfalls in water pressure are determined and the sizes of pumps and tanks required for water spray systems are calculated.
6. Evaluate and implement special hazard fire system solutions.	6.1. The components of the special hazard fire system solution are gathered from relevant ***expert personnel*** as required. 6.2. Special hazard system design drawings are evaluated for efficiency and effectiveness. 6.3. Design drawings are submitted to relevant personnel within the scheduled timeframe. 6.4. Required amendments to design drawings are made or ***negotiated*** as required. 6.5. Final approved design drawings are processed and distributed according to project and workplace requirements. 6.6. ***Fittings and components*** are selected and ordered.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills

• accurate measuring
• accurate naming and filing of drawings, including:
  • formal document control
  • formal amendments, including:
  • history
  • transmittal notices
• editing and creating drawings, including:

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REQUIRED SKILLS AND KNOWLEDGE
• layout • section • detail • external references • freezing layers • fluent detailed hand-drawing and sketching ability to convey information to on-site workers • operating computer software packages and systems, including: • word processing • spreadsheet • email • internet • proprietary project management software • proprietary hydraulic calculation software • proprietary estimating software • parametric modelling software • numeracy skills for: • calculating: • dimensions • pipe lengths • piping friction loss • pump capacity • motor output • performing calculations for electrical systems: • voltage drops • battery capacity • battery back-up • power supplies • performing fluid mechanic calculations • determining cost-benefit of solutions • language and literacy skills for: • listening to and communicating clearly with colleagues, fitters, suppliers and contractors • participating in meetings, such as negotiations with fire engineering consultant, architect, builder or other service contractor • researching, accessing, reading, interpreting and applying current relevant legislation, codes and standards • letter writing, especially to formalise: • recognition of conflicts and errors on drawings supplied by other service

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REQUIRED SKILLS AND KNOWLEDGE
contractors • agreements with other services, for example whichever service is fitted last must fit around existing services • reading and interpreting drawings, plans and specifications, including: • architectural • structural • mechanical • hydraulic • electrical • report writing • developing constructive and cooperative working relationships with project team members, workplace colleagues, suppliers, fitters and clients • negotiation and conflict management • initiating and running meetings with lead contractor and other service contractors • project management • organising own work, including creating personal systems and checklists for planning, managing and checking work • managing detailed input to concurrent fire systems design projects at different stages of the process and with diverse sets of regulatory requirements
Required knowledge
• workplace design tools and processes • naming conventions for design drawings and drawing register • fire science, including: • fire behaviour and dynamics • impact of fire on structures and materials • products of combustion • fire control strategies • fire retardants • fire detection technologies • fire suppression technologies • fire containment • fire engineering principles, including: • engineered solutions • innovative fire systems • fire modelling • proprietary fire engineering and modelling programs • parametric modelling of services coordination using proprietary software, such as Navis-Works or MEP-REVIT • computer software functions and operation, including:

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REQUIRED SKILLS AND KNOWLEDGE
• word processing • spreadsheet • email • internet • proprietary project management software • proprietary hydraulic calculation software • proprietary estimating software • relevant current legislation, codes and standards, including: • building Acts • building regulations • infrastructure supply regulations • the Building Code of Australia • Australian standards for fire systems • international standards for fire systems • other fire system standards commonly required by building insurers • protection requirements for different buildings, including the existence of special zones, the egress requirements of occupants, and the construction materials used • passive fire safety elements, including: • identification of passive elements • impact of fire systems design on passive elements • specifications required to safeguard integrity of passive fire element performance where penetrations are necessitated by the fire systems design • fire systems' technology and components, including: • water-based systems, including: • wet pipe sprinkler systems • deluge and drencher systems • dry pipe sprinkler systems • pre-action sprinkler systems • early suppression fast response (ESFR) • hydrants, hose reels and monitors • water supply tanks • fire pump sets • detection and warning systems, including: • emergency warning and intercommunications systems (EWIS) • fire detection and alarm systems • smoke control systems • emergency lighting systems • special hazard fire systems, including:

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REQUIRED SKILLS AND KNOWLEDGE
• foam systems (low expansion, medium expansion and high expansion) • gaseous agent systems (carbon dioxide, inert gas and halocarbon gases) • water spray systems (deluge, medium/high velocity water spray and high speed deluge) • chemical systems, including: • powder • wet chemical • purpose and operation of fire systems, including: • layout • special products and hazards • system operation • performance requirements • maintenance standards • system activation and operation • characteristics and limitations of products and materials used in fire systems and issues relating to material capability • interconnection of fire systems, including: • cause and effect matrix • interface with other services • instruments used in commissioning and measuring fire system performance • basic principles of structural engineering • characteristics of building materials • construction industry terminology • roles and responsibilities of relevant building project personnel, including: • architect • lead contractor • mechanical engineer • hydraulic engineer • electrical engineer • on-site issues that can arise during the construction phase and impose changes to the designs of fire systems and other services • installation methods, including: • access requirements • health and safety requirements • water supplies, including: • common water sources • conservation requirements • in-ground reticulation • booster configurations

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REQUIRED SKILLS AND KNOWLEDGE

• fluid mechanics and hydraulics relating to:
  • water supply
  • pressure
  • pump selection
  • tank selection
  • pressure vessels
  • pipe range
• sustainability requirements and ratings, including:
  • energy conservation
  • water conservation
• pipe fabrication methods and constraints
• mathematic principles, equations and calculation methods, including:
  • financial calculations, for example to assess cost-effectiveness of fire systems
  • trigonometry, for example to amend dimensions of pipe allowing for fittings
  • flow calculations, including:
  • area of operations
  • discharge rates and quantities
  • discharge times
  • pressure gain and loss
  • K-factors
  • pressure, temperature and volume relationship
  • Hazen-Williams equation
  • Darcy Weisbach equation
  • computational fluid dynamics
  • electrical calculations (alarm systems), including:
  • voltage drops
  • battery sizes
  • battery back-up
  • power supplies
  • cabling range
  • system calculations for gas or special hazard fire systems
• principles of organic and inorganic chemistry, including basic chemical substances and reactions
• principles of basic physics, including an understanding of:
  • Boyle's Law
  • Charles' Law
  • Dalton's Law

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REQUIRED SKILLS AND KNOWLEDGE

• Henry's Law
• principles of thermodynamics, including:
  • effects of heat
  • stratification of gases
  • smoke and heat dynamics
• electrical and electronics theory, including:
  • units used to measure current (AC and DC), power, capacitance, inductance and sound attenuation
  • effects of AC and DC current in series and parallel circuit paths that includes resistive, inductive and capacitive loads
  • relationship between voltage drops around a circuit and applied voltage
  • definition of voltage ratings as defined in communication and electrical safety regulations, including extra low voltage, low voltage and hazardous voltages
  • layout of electrical wiring systems to meet communication and electrical safety regulations applicable to fire detection and warning systems
  • basic operation of common electronic and electrical components used in fire detection and warning systems
  • basic operation of communication protocols on addressable systems, peripheral devices (printers) and high-level interfaces to other communication devices used in fire detection and warning systems
• acoustics and speech intelligibility for occupant warning systems
• human psychology, especially fire avoidance behaviour
• organisational frameworks and functions, including:
  • industry associations
  • enterprises
  • government bodies
• financial management, including:
  • budgeting
  • cost-effectiveness
• contractual processes

Evidence Guide

EVIDENCE GUIDE
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the

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EVIDENCE GUIDE	
Assessment Guidelines for the Training Package.	
Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that the simulated or project-based assessment fully replicates workplace conditions, materials, activities, responsibilities and procedures. This unit could be assessed as an activity involving the analysis, design and evaluation of complex special hazard fire systems, including the application of appropriate codes and standards in accordance with the design requirements of the client.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the required skills and knowledge specified within this unit. In particular the person should demonstrate: • knowledge of fire sciences sufficient to ensure the design of compliant and effective systems that address the specific conditions of the projects being undertaken • numeracy skills sufficient to ensure accurate calculations of system capacities and performance • the ability to read and interpret a range of design documents, including concept briefs, design briefs, drawings, plans and specifications • an understanding of and ability to apply legislation, codes, standards, and regulatory and insurance requirements that may apply to special hazard fire systems design projects, including U.S. NFPA standards • the ability to research appropriate special hazard fire detection and warning systems • the ability to produce accurate technical drawings of the layout for the special hazard design • the ability to design integrated solutions encompassing fire detection, warning and suppression components for special hazard fire

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EVIDENCE GUIDE	
	systems as they apply to at least three different types of hazards requiring the application of different technical solutions.
Context of and specific resources for assessment	Assessment of essential underpinning knowledge may be conducted in an off-site context. It is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • access to relevant Australian and international codes and standards • access to legislation relevant to the jurisdiction • project documentation, including design brief, design drawings, specifications, construction schedules and other supporting documents • research resources, including product information and data • theoretical texts and other information to support the assessment of the unit's required skills and knowledge • relevant computer software packages and suitable hardware.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments.
Guidance information for assessment	Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment

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EVIDENCE GUIDE	
	support. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Fire suppression solutions include:	• gaseous agent systems, including:
	  • carbon dioxide
	  • inert gases
	  • halocarbon systems
	  • FM-200
	  • FE-25
	  • Inergen
	• foam systems, including:
	  • low expansion foams
	  • medium expansion foams
	  • high expansion foams
	• water spray systems, including:
	  • deluge systems
	  • medium and high velocity water spray systems
	  • high speed deluge systems.

The ***risk profile*** of the building or facility will reflect the usage of the building, including:	• the need to protect people
	  • the value of the goods stored
	  • the susceptibility of the stored goods to water or other forms of damage.

The ***special hazard standards***	• U.S. NFPA standards, including:

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RANGE STATEMENT	
include:	• NFPA 2001 Clean Agent Fire Extinguishing Systems • NFPA 11 Low, Medium and High Expansion Foam Systems • NFPA 11A Medium and High Expansion Foam Systems • NFPA 13 The Installation of Sprinkler Systems • NFPA 16 Deluge Foam-Water Sprinkler and Foam-Water Spray Systems • relevant Australian standards, including: • AS4214 Gaseous fire extinguishing systems • AS2008 Part 1 • AS2008 Part 3 • also note: • building insurers may specify the standards they require to issue cover on buildings and facilities • increasingly, international ISO standards are being identified for the industry • special hazards are not referenced in the Building Code of Australia.
Fire detection and occupant warning solutions include:	• smoke-sensing detectors • heat-sensing detectors • fire alarms • flame detectors • fire gas detectors.
Project drawings and documentation may include:	• architectural • structural • mechanical • electrical • hydraulic • fire engineer's or estimator's specifications.
Interactions between multiple systems on a complex site are analysed to:	• ensure the most effective selection of systems to protect different assets • maximise the effectiveness of the systems • maximise the efficiency of the installation process.

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RANGE STATEMENT	
Efficient and workable layout and location relate to:	• penetrations • conflict with other services • occupational health and safety risks • access constraints • installation problems • aesthetic requirements • efficiencies to facilitate work on site • reduction of labour costing.
System components may include:	• discharge nozzles • pipework • brackets • system valves • zone valves • fire panels.
Calculations that relate to the various forms of special hazard systems include:	• water-spray system calculations • hydraulic calculations to assess pressure requirements and confirm pipe sizes • gaseous system calculations • foam system calculations.
Infrastructure for special hazard solutions include:	• pipework • storage containers • delivery systems for the suppression agent (e.g. foam, gas or water) • tanks.
Large and complex projects may use ***expert personnel*** to:	• design sub-components of a total solution, for example electrical components.
Negotiated changes may be made due to:	• non-compliance with applicable legislation, codes and standards • impact on installation risks and constraints • impact on cost-effectiveness.
Fittings and components may include:	• hangers • sprinkler heads • elbows • tees • pumps • tanks • control valves.

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Unit Sector(s)

Unit sector	Fire systems design

Co-requisite units

Co-requisite units	Nil

Competency field

Competency field	Senior management

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CPCSFS7003A Develop and submit tenders for fire systems design solutions

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency specifies the outcomes required to research, plan and prepare tenders for the design and implementation of cost-effective fire systems design solutions. The design and implementation of fire systems design projects occur in a competitive commercial environment. It is not sufficient to design effective and technically compliant fire systems design solutions for clients. It is also essential that the solutions are cost-effective and can be commercially competitive. Client requirements may specify use of the U.S. National Fire Protection Association (NFPA) standards. Licensing, legislative, regulatory or certification requirements may apply to this unit and so the varying state or territory requirements should be confirmed with the relevant body.

Application of the Unit

Application of the unit	This unit of competency supports the attainment of skills and knowledge necessary to research, plan, cost and tender for the design, fabrication and installation of efficient, effective and compliant fire suppression and detection systems.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units	Nil

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Research fire system component capacities and costs.	1.1. ***Industry networks and mechanisms*** are used to maintain current understanding of developments in fire system technology. 1.2. Research is conducted into changes to the ***relevant legislation***, ***codes and standards*** for the fire systems design sector to maintain currency of knowledge. 1.3. Research is conducted to identify the capacity, performance characteristics and cost of alternative components of the range of appropriate ***fire suppression and detection solutions***. 1.4. A cost-benefit and efficiency analysis of the range of fire suppression and detection systems is conducted. 1.5. The proposed project's ***documentation and drawings*** are fully scrutinised and assessed.
2. Prepare estimate of labour costs.	2.1. The skill profile and number of personnel required to design and install the proposed fire system are identified. 2.2. ***Options*** for securing the required personnel are analysed. 2.3. The types and numbers of appropriate on-site personnel are identified and the time required on site is estimated. 2.4. Labour costs are calculated with allowance for the full range of on-costs and cost changes during the life of the project.
3. Prepare estimate of material costs.	3.1. The quantities of selected fittings and materials are calculated. 3.2. Cost estimates for the purchase and fabrication of the project's fittings and materials from internal and external suppliers are negotiated, secured and analysed. 3.3. Cost estimates for the use, purchase or hire of required plant or equipment to support the design and installation process are negotiated, secured and analysed.
4. Prepare estimate of other project costs and margins.	4.1. Cost estimates of ***overhead costs*** are identified and estimated for the project. 4.2. The required profit margin is identified in line with the company's strategic requirements and policies.
5. Prepare business	5.1. Total project resource requirements and costs are

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ELEMENT	PERFORMANCE CRITERIA
proposal or tender.	analysed and synthesised for inclusion in the business proposal or tender. 5.2. The business proposal or tender requirements are analysed and applied in the development of the tender. 5.3. Legal, financial or accounting expertise is sought as required in the preparation of the business proposal or tender and in line with company policies and procedures. 5.4. The business proposal or tender is finalised in line with company policies and procedures and the requirements of the project brief.
6. Finalise and support the bid process.	6.1. The business proposal or tender is submitted within required timeframe. 6.2. Responses are provided to the potential client in response to queries in a professional manner and in line with company policies and procedures. 6.3. Negotiations regarding proposed services, timelines or price are conducted as required and in a professional manner and in line with company policies and procedures. 6.4. The business proposal or tender bid process is finalised in a professional manner and in line with company policies and procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills

• accurate measuring
• numeracy skills for:
  • financial calculations:
  • labour costs
  • overhead costs
  • profit margins
  • water-based system calculations:

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REQUIRED SKILLS AND KNOWLEDGE
• dimensions • pipe lengths • piping friction loss • pump capacity • motor output • electrical system calculations: • dimensions • voltage drops • battery capacity • battery back-up • power supplies • language and literacy skills for: • participating in meetings, such as negotiations with client, fire engineering consultant, architect, builder or other service contractor • researching, accessing, reading, interpreting and applying current relevant legislation, codes and standards • preparing documentation, including to formalise tender responses and contracts • updating knowledge of products, software systems and technology • reading and interpreting drawings, plans and specifications, including: • architectural • structural • mechanical • hydraulic • electrical • computer skills for: • word processing • spreadsheets • estimating and costing • researching and evaluating competing technologies in new products and systems • negotiation and conflict management • lateral thinking and problem solving
Required knowledge
• computer software functions and operation, including relevant proprietary software • relevant current legislation, codes and standards, including: • building Acts • building regulations • infrastructure supply regulations

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REQUIRED SKILLS AND KNOWLEDGE
• the Building Code of Australia • Australian standards for fire systems • international standards for fire systems • other fire system standards commonly required by building insurers • passive fire safety elements: • identification of passive elements • impact of fire systems design on passive elements • specifications required to safeguard integrity of passive fire element performance where penetrations are necessitated by the fire systems design • fire systems' technology and components, including: • water-based systems, including: • wet pipe sprinkler systems • deluge and drencher systems • dry pipe sprinkler systems • pre-action sprinkler systems • early suppression fast response (ESFR) • hydrants, hose reels and monitors • water supply tanks • fire pump sets • detection and warning systems, including: • emergency warning and intercommunications systems (EWIS) • fire detection and alarm systems • smoke control systems • emergency lighting systems • special hazard fire systems, including: • foam systems (low expansion, medium expansion and high expansion) • gaseous agent systems (carbon dioxide, inert gas and halocarbon gases) • water spray systems (deluge, medium/high velocity water spray and high speed deluge) • chemical systems, including: • powder • wet chemical • characteristics and limitations of products and materials used in fire systems and issues relating to material capability • interconnection of fire systems, including: • cause and effect matrix • interface with other services • tendering processes, including:

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REQUIRED SKILLS AND KNOWLEDGE
• interpretation of bid requirements • interpretation of contractual requirements

Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that the simulated or project-based assessment fully replicates workplace conditions, materials, activities, responsibilities and procedures. This unit could be assessed as an activity involving the development and submission of tenders for fire systems design projects. This entails researching the capacities of a range of fire system components, preparing detailed schedules of costs for labour and materials, identifying and applying profit margins, and preparing the business proposal or tender response. Integral to the process is the capacity to work with the potential client, build relationships and conduct negotiations leading up to the finalisation of the tender or bid process.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the required skills and knowledge specified within this unit. In particular the person should demonstrate: • knowledge of tendering, bid and contractual processes • numeracy skills sufficient to ensure accurate calculations of system capacities and performance and their costs • the ability to read and interpret a range of design documents, including concept briefs,

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EVIDENCE GUIDE	
	design briefs, drawings, plans and specifications • an understanding of and ability to apply legislation, codes, standards, regulatory and insurance requirements that may apply to fire systems design projects, including U.S. NFPA standards • the ability to research appropriate fire detection and warning systems • the ability to prepare tender or bid documentation that meets the bid specification requirements • the ability to build relationships with potential clients and conduct business negotiations.
Context of and specific resources for assessment	Assessment of essential underpinning knowledge may be conducted in an off-site context. It is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • access to relevant Australian and international codes and standards • access to legislation relevant to the jurisdiction • project documentation, including tender or bid specification, design brief, design drawings, construction schedules and other supporting documents • research resources, including product information and data • theoretical texts and other information to support the assessment of the unit's required skills and knowledge • relevant computer software packages and suitable hardware.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical

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EVIDENCE GUIDE	
	application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments.
Guidance information for assessment	Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Industry networks and mechanisms include:	• participation in professional associations • reviewing industry websites • subscribing to and reading professional journals • attendance at industry workshops and conferences • attendance at vendor presentations and displays of new fittings and components.
Relevant legislation, codes and standards include:	• building Acts • building regulations • infrastructure supply regulations • the Building Code of Australia

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RANGE STATEMENT	
	• Australian standards for fire systems • international standards for fire systems • other fire system standards commonly required by building insurers, including the U.S. NFPA standards.

Fire suppression and detection solutions include:	• water-based systems, including:
	  • wet pipe sprinkler systems
	  • deluge and drencher systems
	  • dry pipe sprinkler systems
	  • pre-action sprinkler systems
	  • early suppression fast response (ESFR)
	  • hydrants, hose reels and monitors
	  • water supply tanks
	  • fire pump sets
	• detection and warning systems, including:
	  • emergency warning and intercommunications systems (EWIS)
	  • fire detection and alarm systems
	  • smoke control systems
	  • emergency lighting systems
	• special hazard fire systems, including:
	  • foam systems (low expansion, medium expansion and high expansion)
	  • gaseous agent systems (carbon dioxide, inert gas and halocarbon gases)
	  • water spray systems (deluge, medium/high velocity water spray and high speed deluge)
	• chemical systems, including:
	  • powder
	  • wet chemical.

Documentation and drawings include:	• architectural • structural • mechanical • electrical • hydraulic • fire engineer's or estimator's specifications.
Options for securing personnel may include:	• selecting existing team members • recruiting new personnel

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RANGE STATEMENT	
	• contracting external personnel.
Overhead costs apportioned to the project include:	• WorkCover costs • environmental protection agency fees • waste management site fees • professional indemnity insurance • other business insurances • travel costs • cost of financing the project • cost of seeking approvals and lodging designs • external consulting costs.

Unit Sector(s)

Unit sector	Fire systems design

Co-requisite units

Co-requisite units	Nil

Competency field

Competency field	Senior management

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CPCSUS4001A Implement and monitor environmentally sustainable work practices

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to effectively analyse, implement and monitor environmentally sustainable work practices and their effectiveness on a work site, including contributing to consumer environmental efficiency.

Application of the Unit

Application of the unit

This unit of competency supports the needs of those with responsibility for a specific area or site of work, or those who lead a work group or team by using processes and techniques necessary to implement and monitor environmentally sustainable work practices, including the development of processes and tools.

The context of this competency applies to all sectors of the construction industry. It may be applied to all sections of an organisation, including a work site, designated work area, in transit and/or an office.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Investigate current practices in relation to resource usage.	1.1. Environmental regulations applying to the organisation are identified. 1.2. Procedures for ensuring ***compliance*** with environmental regulations are assessed. 1.3. Information on ***environmental and resource efficiency*** systems and procedures are collected, and where appropriate, provided to ***stakeholders***, ***key personnel and specialists***. 1.4. Current resource usage is measured and documented by members of the work group. 1.5. Current ***purchasing strategies*** are analysed and documented. 1.6. Current work processes and products are analysed to access information and data and to assist in identifying areas for improvement.
2. Set targets for improvement.	2.1. Input is sought from stakeholders, key personnel and specialists and shared with them as appropriate. 2.2. External sources of information and data are accessed as required. 2.3. Alternative solutions to work site environmental issues are evaluated. 2.4. Efficiency targets are set.
3. Implement performance improvement strategies.	3.1. ***Techniques and tools*** are sourced to assist in achieving targets. 3.2. Continuous improvement strategies are applied to work site, including ideas and possible solutions to communicate to stakeholders, key personnel and specialists. 3.3. Environmental and resource efficiency improvement plans for work site and clients are integrated with other operational activities and implemented. 3.4. ***Suggestions*** and ideas about environmental and resource efficiency management are sought from stakeholders, key personnel and specialists and shared with them to act on as appropriate. 3.5. Costing strategies are implemented to fully value environmental assets and are shared with stakeholders, key personnel and specialists as necessary.
4. Monitor performance.	4.1. Outcomes are documented and reports on targets are

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ELEMENT	PERFORMANCE CRITERIA
	communicated to key personnel and stakeholders. 4.2. Strategies are evaluated. 4.3. New targets are set and new tools and strategies investigated and applied. 4.4. Successful strategies are promoted and, where possible, participants rewarded.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- ability to source/identify the latest industry environmental sustainability concepts and technologies
- applying learning to future opportunities
- change management skills
- communication skills to:
  - answer questions
  - clarify and acknowledge suggestions relating to work requirements and environmental efficiency with stakeholders
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret:
    - documentation
    - environmental and resource efficiency requirements
  - support information flow between various internal and external stakeholders to resolve and report on environmental and resource efficiency issues
  - use and interpret non-verbal communication
  - use language and concepts appropriate to cultural differences
- creating tools to measure and monitor improvements and report on outcomes to stakeholders
- innovation skills to identify improvements, apply knowledge about resource use to organisational activities and customer service, and develop resource efficiency tools
- numeracy skills to analyse data on company and stakeholder resource consumption and waste product volumes

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REQUIRED SKILLS AND KNOWLEDGE

- problem solving skills to recognise and analyse problems, including:
  - devising approaches
  - implementing and reflecting on environmental and water, energy or resource efficiency management policies and procedures relevant to work site to improve environmental sustainability
  - share alternative approaches as required
- skills to relate to different genders and people from a range of social, cultural and ethnic backgrounds and with a range of physical and mental abilities
- technology skills, including the ability to:
  - operate and shut down equipment
  - where relevant, use software systems for recording and filing documentation for measurement and improvement of resource usage and consumption.

Required knowledge

Required knowledge for this unit is:

- how tradespersons can contribute to environmental sustainability
- knowledge of compliance requirements for all relevant environmental and sustainability legislation, regulations and codes of practice including resource hazards and risks associated with work site:
  - supervision
  - job specifications
  - strategies and procedures to maximise opportunities and minimise impacts relevant to stakeholders and personal area of responsibility
- relevant knowledge of environmental, resource and energy/water efficiency issues, systems and procedures specific to industry practice
- knowledge of best practice approaches and quality assurance systems relevant to area of responsibility and industry
- ability to identify and advise on water/energy efficiency opportunities for stakeholders and key personnel
- supply chain procedures
- OHS issues and requirements
- organisational structure and reporting channels and procedures
- terms and conditions of employment, including policies and procedures, such as:
  - daily tasks
  - equal opportunity
  - work area responsibilities
  - worker, supervisor and employer rights.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by analysing and monitoring effective sustainable work practices on a construction project work site.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- implement and monitor integrated environmental and resource efficiency management policies and procedures within a work site, including:
  - access, collect, analyse and organise information from a number of sources to provide information, advice and tools or resources for improvement opportunities to stakeholders and key personnel
  - identify possible areas for improved practices and resource efficiency for stakeholders
  - communicate benefits of changing practices to work team and customers
  - implement new approaches and improvement plans, including planning and organising activities for staff and stakeholders in relation to:
    - measurement of current use
    - devising strategies to improve environmental and resource efficiency issues
    - reporting as required ensuring appropriate action is taken within work site in relation to environmental and sustainability compliance and potential

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hazards

- monitor and evaluate improvement plans and efficiency targets, using evaluation and monitoring tools and technology to potentially revise and adjust approaches and strategies to ensure continuous improvement.

Evidence that could be used, reflecting the requirements of the unit of competency and work being performed as evidence, include:

- reports of activities of work group in relation to:
  - measurement of resources and efficiency
  - development of improvement strategies
- work plans outlining approaches to improved practices, with documented benchmarks
- invoices from stakeholders specifying materials recommended for improved efficiency and those actually used
- quotes and tenders
- lists of environmental hazards, risks and inefficiencies, and opportunities for improvements identified in the work site
- work samples, tools, techniques or simulated activities and the outcomes.

Processes may include:

- relevant authenticated correspondence
- way in which advice is sought and suggestions made about improvements from stakeholders and key personnel
- evidence of implementation of programs, such as:
  - green building program
  - supply chain program for purchasing sustainable products
  - environmental site management framework or product recommendations
- notes on understanding external benchmarks and support for particular benchmarks to be used, with expected outcomes and including approaches to recommend products and practices to stakeholders for improving their resource use.

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Resource implications for assessment must include:

- observation by the assessor over a period of time and in a range of situations and/or evidence provided to the assessor in written or verbal form, including:
- implementing tools and techniques
- review of work site and stakeholders/key personnel to assess and measure resource use, hazards and compliance
- application of learning to future activities
- recommended products and practices to stakeholders
- access to a range of information and resources for assessment as listed in the range statement, such as:
  - environmental and sustainability legislation
  - compliance documentation
  - organisational and procedural requirements or organisation plans
  - work supervision and work site documentation, including personnel and responsibilities
  - quotes, tenders, invoices.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets

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- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be

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	obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Compliance includes:	• meeting relevant Acts, laws, by-laws and regulations, codes of practice or best practice to support compliance in environmental performance and sustainability at each level as required (such as Environmental Protection, Biodiversity Conservation Act and Building Code of Australia)
	• levels include:
	  • federal
	  • industry
	  • international
	  • local government
	  • organisation
	  • reporting breaches
	  • state and territory.

Environmental and resource efficiency includes:	• approaches of industry associations, such as:
	  • Australian Building Greenhouse Rating
	  • green plumbers
	  • green purchasing
	  • Housing Industry Association (HIA) GreenSmart
	  • ISO 14001 Environmental Management Systems
	  • lifecycle thinking
	  • Master Builders Association of Victoria

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RANGE STATEMENT

Green Living, Leadership in Energy and Environmental Design (LEED), or Green Building Council of Australia (GBCA) Green Star environmental rating system
    - National Australian Building Environmental Rating Scheme (NABERS)
    - product stewardship
    - supply chain management
    - Victoria Stormwater Management Guidelines of the Environment Protection Authority (EPA)
- implementing and using alternative practices, procedures or materials to reduce or eliminate resource consumption on work site
- recommendations to stakeholders, including:
    - addressing environmental and resource sustainability initiatives, such as an environmental framework, action plan, recommendations, surveys and audits with stakeholders and key personnel
    - efficient water use (e.g. rainwater tanks, grey water sprinkler systems or timers)
    - energy use (e.g. equipment/appliances installed; equipment, appliance and tool maintenance; transporting materials; heating and cooling; and building efficiency)
    - environmental site management
    - evaluating and implementing most appropriate waste treatment, including waste to landfill, recycling, re-use, recoverable resources and wastewater treatment through site management
    - improving resource, energy and water efficiency
    - including environmental performance in tender and quote specifications
    - initiating and maintaining appropriate work site procedures for operational energy consumption, including stationary and non-stationary (transport) energy
    - preventing and minimising risks and maximising opportunities on work site and

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RANGE STATEMENT

	for stakeholders • reducing emissions of greenhouse gases • reducing material usage • reducing stormwater pollution • reducing use of non-renewable resources • types of products and materials used • reference to standards, guidelines, industry association standards, codes of practice and best practice approaches such as: • federal government standards, including five-star rating for all new homes.
Stakeholders, key personnel and specialists (individuals and groups) both within and external to the organisation who have direct or indirect interest in the organisation's conduct, actions, products and services, include:	• clients • employees at all levels of the organisation • government • investors • key personnel within the organisation • local community • specialists outside the organisation who may have particular technical expertise • suppliers • other organisations.
Purchasing strategies include:	• influencing stakeholders to take up environmental sustainability approaches and products • researching and participating in programs, such as a supply chain program to purchase sustainable products (such as radial timber, sustainable timber, and low flow fittings and appliances).
Techniques and tools include:	• accessing the skills of others as appropriate to the specific industry context • environmental site management plans • examination of invoices from suppliers • examination of relevant information and data • integration of environmental and sustainability specifications in quotes and tenders • measurements made under different conditions • recommendation of sustainable products and practices to stakeholders.
Suggestions include:	• eliminating the use of hazardous and toxic materials

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RANGE STATEMENT

- expressing green purchasing power through using and recommending a selection of suppliers with improved environmental performance (e.g. green power, lifecycle thinking, product stewardship, energy or water efficiency)
- ideas that help to improve energy and water efficiency
- making more efficient use of resources, materials, energy and water
- maximising opportunities to use renewable, recyclable, reusable and recoverable resources (energy, water, materials, products and waste)
- preventing and minimising risks and maximising opportunities, such as use of renewable energy such as solar or grey water, and other alternative forms of water, energy and resources
- recommending and using alternative sustainable products, materials, procedures, practices and installation techniques
- reducing emissions of greenhouse gases by reducing waste and transport
- reducing the consumption of non-renewable resources, such as water, fuel, and materials
- seeking alternative sources of water and energy or encouraging conservation.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Functional area

Functional area

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CPCSUS4002A Use building science principles to construct energy efficient buildings

Modification History

New unit.
This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

Unit Descriptor

This unit of competency specifies the outcomes required to incorporate building science principles into the construction of energy efficient buildings.
The unit is relevant for those involved in the construction of energy efficient buildings. It requires the ability to use constructive thinking and problem-solving processes to identify appropriate solutions.
The unit also requires consultation with others.

Application of the Unit

This unit of competency applies to those who apply building science principles to the construction of new buildings in the residential and commercial building sector.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Define performance measures and expectations of the building envelope.	1.1	***Relevant stakeholders*** are consulted to identify expected type of use for the building and energy efficiency expectations of its owners or occupiers.
		1.2	Durability expectations of the building are identified and factored in to decisions relating to construction methods and materials to be used.
		1.3	Occupants' indoor activities and health and safety considerations are identified to inform recommendations of building products, materials and systems.
		1.4	Environmental and climatic conditions impacting the building are researched and ***extreme weather conditions*** are noted for planning and construction purposes to determine resiliency opportunities.
		1.5	Relevant legislation, standards, ***regulations and codes*** are consulted to identify minimum energy efficient standards to be met.
		1.6	Relevant domestic and international codes, standards and examples of best practice that meet or exceed current energy efficient standards are consulted to reflect client expectations.
2	Review building methods and construction materials for energy efficiency.	2.1	Building science principles supporting energy efficiency are reviewed with reference to ***contemporary information sources***.
		2.2	Embodied energy of the specified product or materials is reviewed in relation to the energy efficiency

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			expectations of the client.
		2.3	Heating, ventilation and air conditioning (HVAC) systems are researched to identify best contemporary practice that delivers high levels of energy efficiency while minimising risks of inadequate ventilation and poor indoor air quality for occupants.
		2.4	Mechanical ventilation systems and equipment to aid air flows are reviewed for appropriateness and operational costs.
		2.5	Materials for interior and exterior moisture and vapour barriers are researched to identify best contemporary practice that delivers high levels of energy efficiency, durability and appropriateness for the building envelope.
3	Evaluate and select building design and construction methods and materials for energy efficiency.	3.1	Site location and building position are identified and maximised for energy efficiency according to environmental factors, climatic conditions and identified use of building.
		3.2	Planned opportunities for heat, air and moisture flows throughout the building are identified and assessed against energy efficiency expectations.
		3.3	Planned ***cavities*** in the building are identified and strategies for sealing or minimising unwanted air leakages are developed.
		3.4	HVAC systems are evaluated and selected for the site to use minimal energy while minimising risks of inadequate ventilation and poor indoor air quality for occupants.
		3.5	Mechanical ventilation systems and equipment are evaluated and selected for appropriateness to the site and operational costs.
		3.6	Materials for interior and exterior barriers are evaluated and selected for energy efficiency, durability and appropriateness for building site.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to:
  - evaluate own actions and make judgments about performance and necessary improvements
  - respond to change, such as differences in current work site environmental and sustainability requirements
- numeracy skills to measure and interpret energy efficiency readings presented in numerical or graphical formats
- oral communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm expectations, and share information
  - report hazards involved in the work
  - use language and concepts appropriate to cultural differences
- reading skills to:
  - conduct own research into current building and construction methodologies and new materials technology
  - interpret documentation, including drawings and specifications
  - understand written instructions, procedures and signage
- writing skills to provide recommendations regarding ways to improve energy efficiency outcomes of buildings

Required knowledge

- application and limitations of energy efficient construction materials
- general construction terminology
- impacts of different climate zones and environmental conditions on the built environment
- processes for the evaluation of energy efficiencies in buildings
- theories and principles of energy efficiency applied to buildings and construction processes
- types, uses and limitations of different construction materials and the role of embodied energy when selecting construction materials and products for energy efficient buildings
- work health and safety (WHS) requirements in different jurisdictions

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by performing a range of tasks in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- apply building science methodologies as outlined in this unit to the construction of two new construction projects
- undertake research into a range of energy efficient design and construction methods for the two new construction projects with a specific focus on:
  - energy efficient heating, ventilation and air conditioning systems
  - energy efficient materials and construction methods
- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and WHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- communicate and work effectively and safely with others.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity

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- workplace instructions relating to safe work practices and addressing hazards and emergencies
- research resources, including industry-related systems information
- safety data sheets.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using one or more of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Relevant stakeholders may include:

- architects
- builders
- building owners or investors
- building designers
- developers
- engineers

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	• facility managers • occupants.
Extreme weather conditions may include:	• cyclonic activity • extreme heat and risk of fire • heavy rain and flooding • storm weather.
Regulations and codes must include:	• local planning codes and regulations • National Construction Code.
Contemporary information sources may include:	• local and international research into building science methods • systems theory and analysis • manufacturer websites and technical data for energy efficient construction materials and systems.
Cavities may include:	• gaps around ceiling down lights • gaps around insulating material • gaps under and around doors • openings for floor or ceiling ducts used to transmit heating or cooling • wall, floor or ceiling cracks • window seals.

Unit Sector(s)

Construction

Custom Content Section

Not applicable.

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CPCSUS4003A Maximise energy efficiency through applied trade skills

Modification History

New unit.
This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

Unit Descriptor

This unit of competency specifies the outcomes required to undertake a trade using techniques and practices aimed at achieving high levels of energy efficiency in the finished work. Energy efficiency requirements may be specified by legislation or building codes, or commissioned by a client or a site manager. The unit may include working with others and as a member of a team.

Application of the Unit

This unit of competency applies to builders and tradespeople who identify opportunities for energy efficiency gains in a building and apply energy efficiency techniques in residential and commercial construction work.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Identify energy efficiency aims of the project.	1.1	***Building science principles*** are used to identify the ***energy efficiency expectations*** of the work based on plans, drawings and specifications.
		1.2	***Relevant personnel and stakeholders*** are consulted to confirm the ***building envelope*** and energy efficiency requirements of the work, and identify specific instructions on priority areas.
		1.3	Limitations to achieving the energy efficiency requirements are identified and communicated to relevant personnel in order to identify appropriate solutions.
2	Prepare for task.	2.1	Products and ***materials*** are identified based on building science knowledge and according to project energy efficiency specifications, substitutions are checked for comparable energy efficiency characteristics, and are approved with relevant personnel before use.
		2.2	Plant, tools and equipment selected to carry out tasks are consistent with building science principles and the requirements of the job to deliver energy efficient outcomes.
		2.3	Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
		2.4	Material quantity requirements are calculated according to plans, specifications and energy efficiency.

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		2.5	Differences in standard practice to achieving energy efficient outcome are identified and factored into work plan to gain approval, and task timeframe is adjusted where appropriate.
3	Perform tasks using ***energy efficient techniques.***	3.1	Unnecessary waste of products and materials is avoided through the use of ***energy efficient techniques***, and greenhouse gas emissions are specifically minimised or eliminated.
		3.2	Products and materials are handled and used according to manufacturer specifications to ensure energy efficiency ratings are maintained when installed.
		3.3	Planned cavities and openings created in the building envelope during the project are minimised or sealed to avoid unnecessary air leakages.
		3.4	Opportunities for achieving energy efficiency outcomes by minimising energy leakages are maximised by communicating with others on site when required.
4	Finalise and evaluate work.	4.1	Assessment by qualified energy assessor of work undertaken is arranged to confirm extent of energy efficiency outcomes achieved.
		4.2	Improvements required in own work practices to ensure energy efficiency outcomes are identified and noted for future development.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to:
  - evaluate own actions and make judgments about performance and necessary improvements
  - respond to change such as differences in current work site environmental and sustainability requirements
- numeracy skills to calculate and confirm correct quantities of materials for work tasks
- oral communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - report hazards on the work site, including faults in tools, equipment or materials
  - use language and concepts appropriate to cultural differences
- reading skills to:
  - interpret documentation, including drawings and specifications
  - understand written instructions, procedures and signage
  - interpret manufacturer instructions for safe handling of tools and equipment
- writing skills to complete pre-operational checklists and simple equipment fault forms

Required knowledge

- general construction terminology
- introductory awareness of building science and energy efficiency principles
- procedures for the safe handling and storage of materials, and environmentally friendly disposal of materials
- processes for calculating material requirements
- quality requirements relevant to the task
- types, characteristics, uses and limitations of tools and equipment
- types, location and use of relevant safety information, such as:
  - job safety analyses (JSA) and safe work method statements
  - safety data sheets
  - safety manuals and instructions for tools, plant and equipment
  - signage
  - environmental and work site safety plans
- workplace and equipment safety requirements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by performing a range of tasks in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- undertake three different tasks within the relevant trade specification, using principles or techniques that are designed to maximise the energy efficiency characteristics of the building or project
- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and work health and safety (WHS) legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality, environmental and sustainability requirements
- safely and effectively operate and use tools, plant and equipment and handle materials and components
- communicate and work effectively and safely with others.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and

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addressing hazards and emergencies
- research resources, including industry-related systems information
- safety data sheets.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using one or more of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function, such as

- CPCCCM1012A Work effectively and sustainably in the construction industry
- CPCSUS4001A Implement and monitor environmentally sustainable work practices

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Building science principles must include:

- building envelope
- effective ventilation
- heat, air and moisture flows:
  - conduction

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	• convection • radiation • interaction between occupants, building components and systems, and the environment both indoors and out • moisture management.
Energy efficiency expectations may include:	• acoustic insulation between zones and rooms • achieving relevant energy efficient requirements in the National Construction Code, and other relevant codes and regulations • achieving or maintaining a home energy rating, commercial building rating, or equivalent energy rating or industry standards and regulations • effectively selecting and using thermal mass • energy conservation • minimising infiltration • minimising the heat loss and maximising the heat gain based on the requirements of the building reflective of the climatic zones • minimising thermal bridging • passive solar design approach • reducing or minimising energy costs and consumption to heat and cool the building • thermal resistance • ventilation, heat and energy recovery • zero energy homes.
Relevant personnel and stakeholders may include:	• architect • builder • developer • draftsperson • energy assessor • energy modeller • facility manager • heating, ventilation and air conditioning (HVAC) designer • HVAC engineer • manufacturer • other trades working at the site • owner • project manager • site manager • supplier.
Building envelope must include:	• building enclosure or shell • the area separating the internal conditioned air from the outside unconditioned air

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- the roof, walls, windows and doors.

Materials may include:

- building and construction materials, including:
  - aerated autoclaved concrete products
  - bricks
  - cement
  - concrete
  - mortar
  - plaster
  - plasterboard
  - plumbing
  - roofing materials
  - steel
  - timber
- building envelope - ceiling, floor, windows and wall insulating materials:
  - air barriers
  - batts
  - expanded polystyrene
  - joining tape
  - reflective foils
  - sealant
  - vapour barriers.

Energy efficient techniques may include:

- advanced framing or optimal value engineering for energy efficient framing
- appropriate selection and installation of insulation without compressing it
- conserving energy by effectively sealing the building envelope to minimise air leakage (exfiltration and infiltration) in the building envelope, shell or enclosure
- effectively installing windows and flashing without breaking the building envelope
- effectively selecting and installing thermal insulation
- minimising embodied energy
- sealing, insulating and minimising duct leakage
- sealing leaky joints
- selecting recycled materials to minimise production energy
- sourcing materials or products locally to minimise transport energy.

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Unit Sector(s)

Construction

Custom Content Section

Not applicable.

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CPCSUS5001A Develop workplace policies and procedures for sustainability

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to develop and implement policies and procedures to continuously support resource efficiency and environmentally sustainable work practices.

Application of the Unit

Application of the unit

This unit of competency applies to those with managerial responsibility for developing approaches to create strategies within workplaces, including the development and implementation of policy. The unit supports processes and techniques necessary to develop approaches to sustainability within workplaces, including the development and implementation of policy.

The context of this unit applies to all industry sectors and sections within an organisation, including a work site, designated work area, in transit and/or an office.

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop workplace sustainability policy.	1.1. Scope of sustainability policy is defined. 1.2. ***Stakeholders*** are identified and consulted as a key component of policy development process. 1.3. ***Strategies*** for minimising resource use, reductions in toxic material and hazardous chemical use, and employment of lifecycle management approaches at all stages of work are included in policy. 1.4. Recommendations are made for policy options based on likely effectiveness, timeframes and cost. 1.5. Policy is developed that reflects organisation's commitment to sustainability as an integral part of the business planning and as a business opportunity. 1.6. Appropriate methods of implementation are agreed.
2. Communicate the policy.	2.1. Policy, including its expected outcome, is promoted to key stakeholders. 2.2. Those involved in implementing the policy are informed of outcomes expected, activities to be undertaken and responsibilities assigned.
3. Implement the policy.	3.1. Procedures to help implement the policy are developed and communicated. 3.2. Strategies for continuous improvement in resource efficiency are implemented. 3.3. Record systems for tracking continuous improvements in sustainability approaches are established and responsibilities assigned.
4. Review policy implementation.	4.1. Outcomes are documented and feedback is provided to key personnel and stakeholders. 4.2. Success or otherwise of policy is investigated. 4.3. Records are monitored to identify trends that may require remedial action, and used to promote continuous improvement of performance. 4.4. Policies and procedures are modified as required to ensure improvements are made.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- effective management of different points of view and dissenting stakeholders
- flexible communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret complex and formal documents, such as policy and legislation
  - suit different audiences and support information flow between various internal and external stakeholders, using language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
  - written skills to prepare written reports requiring:
    - precision of expression
    - language and structures suited to the intended audience
- innovation and problem solving skills to:
  - analyse problems
  - apply knowledge about policy to devise policies and procedures around environmental and water, energy and resource efficiency and new technologies
  - identify improvements and customer service
- research, analyse and present information and techniques
- respond to diversity, including the ability to relate to different genders and people from a range of social, cultural and ethnic backgrounds and with a range of physical and mental abilities
- team work for consultation and validation of policies and procedures
- technology skills for use of software systems, communication, and creating documents and reports.

Required knowledge

Required knowledge for this unit is:

- benchmarking against best practice approaches and support for new approaches
- knowledge of best practice approaches relevant to industry and work area
- knowledge of environmental or sustainability legislation, regulations, compliance and codes of practice applicable to industry and organisation
- knowledge of policy development processes and practices and other relevant organisational policies, procedures and protocols
- principles, practices and available products, tools, technology and techniques of sustainability management relevant to the particular industry context

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REQUIRED SKILLS AND KNOWLEDGE

- quality assurance systems relevant to own organisation
- relevant products, technology, systems and procedures to aid in the achievement of sustainability in the workplace, including environmental and energy efficiency products, technology, issues, systems and procedures specific to industry practice
- sustainability principles and concepts
- terms and conditions of employment, including:
  - equity and diversity principles
  - OHS implications of policy being developed
  - policies and procedures
  - work area responsibilities
  - worker, supervisor and employer rights
- understanding of how the business can contribute to environmental sustainability.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by developing policies and relevant procedures for implementing sustainable work practices on a construction project work site.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- develop enterprise policy for integrated sustainability, ensuring that developed policies comply with legislative requirements, and contain an implementation strategy that has been devised, implemented and reviewed showing a measurable improvement using chosen benchmark indicators
- review the policy after implementation
- communicate with relevant stakeholders
- develop and monitor policies
- communicate with relevant internal and external stakeholders to discuss possible approaches to policy development and implementation, and contribute to the resolution of disputes amongst them
- gather information from a number of sources (including regulatory sources, relevant personnel and organisational specifications) to plan and develop policies
- plan the policy development process, including meetings with stakeholders and key personnel
- develop and monitor policies for analysing data on organisation resource consumption
- use software systems for recording and filing documentation for measurement of current usage, and using word processing and other basic software

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EVIDENCE GUIDE

	to: • interpret charts, flowcharts, graphs and other visual data and information • report. Items that could be used as evidence include: • inefficiencies or opportunities for improvements identified in the workplace • case studies • work documents from meetings or simulated activities • portfolios of evidence on policy processes, including continuous improvement outcomes • new approaches improved continuously over time.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • specifications of particular workplace roles and work area, equipment, systems, organisational structures and documentation • documentation on resources used, and hazards and compliance requirements for benchmarking and continuous improvement. Access to a range of information and resources for assessment as listed in the range statement (such as compliance obligations, organisational plans and work responsibilities). Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package

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EVIDENCE GUIDE

- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating

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RANGE STATEMENT

conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Scope of sustainability policy includes:

- addressing sustainability initiatives through reference to standards, guidelines and approaches, such as
  - federal government standards, including five-star rating for all new homes
  - ecological foot printing
  - Energy Efficiency Opportunities Bill
  - Victoria Stormwater Management Guidelines of Environment Protection Agency
  - global reporting initiative
  - green purchasing programs to purchase sustainable products
  - greenhouse challenge
  - approaches of industry associations, such as:
    - Housing Industry Association (HIA) GreenSmart
    - Australian Building Greenhouse Rating
    - green plumbers
    - Master Builders Association of Victoria Green Living, Leadership in Energy and Environmental Design (LEED), or Green Building Council of Australia (GBCA) Green Star environmental rating system
  - ISO 14001 Environmental Management Systems
  - lifecycle thinking
  - National Australian Building Environmental Rating Scheme (NABERS)
  - product stewardship
  - supply chain management to influence suppliers to take up sustainability approaches
  - sustainability action plans or frameworks
  - sustainability covenants and compacts
  - triple bottom line reporting

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RANGE STATEMENT

	• integrated approach to sustainability that includes environmental, economic and social aspects, or a narrower one to focus on each aspect individually
	• investigation of the particular business and market context of the industry or organisation
	• meeting relevant Acts, laws, by-laws and regulations or best practice to support compliance in environmental performance and sustainability at each level as required (such as Environmental Protection, Biodiversity Conservation Act, Building Code of Australia) and reporting breaches
	• levels include:
	  • federal
	  • industry
	  • international
	  • organisation
	  • state and territory
	• parts of the organisation to which it is to apply, including whether it is for the whole organisation, one site, one work area or combinations of these
	• site management.

Stakeholders include:	• individuals and groups both within and external to the organisation that have direct or indirect interest in the organisation's conduct, actions, products and services, including:
	  • clients
	  • employees at all levels of the organisation
	  • government
	  • investors
	  • key personnel within the organisation, and specialists outside it who may have particular technical expertise
	  • local community
	  • suppliers
	  • other organisations.

Strategies include:	• efficient use of resources, energy and water • environmental site management to minimise stormwater pollution • installation of efficient appliances, techniques

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RANGE STATEMENT

and recommendations for consumer use and opportunities
- maximising the use of recycled, renewable, reusable and reclaimed resource opportunities
- preventing and minimising risks and maximising opportunities for business and stakeholders, such as:
  - promotional activities
  - purchasing of carbon credits or green power
  - raising awareness among stakeholders through product advice and user recommendations
  - reduce the consumption of non-renewable resources
  - reducing emissions of greenhouse gases
  - reducing or eliminating the use of hazardous and toxic materials
  - resource, water and energy audits included in quote or tender
  - training of staff in principles and techniques of sustainability
  - use of solar or renewable energies and water
  - waste treatment initiatives (materials and resources, water).

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

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Functional area

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CPCSUS5002A Develop action plans to retrofit existing buildings for energy efficiency

Modification History

New unit.
This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

Unit Descriptor

This unit of competency specifies the outcomes required when planning to improve the energy efficiency of an existing building.

Application of the Unit

This unit of competency applies to those involved in the design or development of retro fits for energy efficiency, including building designers, tradespeople and building project managers.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Commence retro-fit planning processes.	1.1	***Client requirements and expectations*** for the specific use of the building and the energy efficient retro-fit priorities are discussed and incorporated into planning.
		1.2	***Energy assessment is*** initiated or report from a prior assessment is reviewed and discussed with key stakeholders to determine energy conservation measures.
		1.3	***Client is provided with overview of recommended processes and information relevant to generating an energy efficient retro fit.***
2	Identify and evaluate opportunities to improve energy conservation and efficiency of the existing building.	2.1	Recommendations from energy efficiency assessor are reviewed and evaluated for input into the retro-fit action plan.
		2.2	***Limitations and obstacles*** involved in the energy efficiency upgrade of the building are identified and appropriate ***solutions*** developed.
		2.3	***Risks*** of retrofitting existing building for improved energy efficiency are identified and managed, including possible installation of mechanical ventilation systems.
		2.4	***Strategies*** that provide a measurable increase in the operational energy efficiency of the existing building are developed and costed.
		2.5	Structural adequacy of the existing building is assessed to determine appropriateness of retro-fit solutions for energy efficiency.

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3	Research and select energy efficient materials, products and systems.	3.1	***Materials***, products and systems appropriate to the existing building are researched for energy efficiency specifications.
		3.2	Manufacturer representatives and literature are consulted to identify installation and operational specifications.
		3.3	Compliance requirements for selecting and installing materials, products and systems are understood and adhered to.
		3.4	Thermal and acoustic insulation of the building and quality of installation are assessed where appropriate to determine energy efficiency rating and appropriate solutions to improve insulating properties of the building.
4	Finalise retro-fit action plan.	4.1	***Final retro-fit action plan*** is developed according to organisational procedures.
		4.2	Projected ***benefits*** of undertaking each of the proposed retro fit measures are explained to client.
		4.3	Client sign-off is obtained and ***documentation*** of agreed plan is finalised.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to evaluate information from a variety of sources to inform advice to client on retro-fitting buildings for energy efficiency
- numeracy skills to:
  - calculate and confirm correct quantities of materials for work tasks
  - prepare costings for proposed project work
- oral communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - use language and concepts appropriate to cultural differences
- reading skills to:
  - interpret documentation, including drawings and specifications
  - research and interpret manufacturer product information
- writing skills to develop recommendations and reports for clients

Required knowledge

- building science principles and their application to the retro-fitting of existing buildings for improved energy efficiency
- compliance requirements relating to construction materials and methods, including:
  - Australian standards
  - environmental and sustainability requirements, including:
    - energy efficiency
    - fire resistance, including resistance from bushfire attack
  - National Construction Code deemed-to-satisfy requirements
- energy efficiency ratings available for buildings, and their meaning
- general construction terminology
- processes for calculating material requirements
- risks of completely sealing the building envelope and ways to mitigate them
- types, characteristics, uses and limitations of materials, products and systems used when retrofitting for energy efficiency
- types, uses and limitations of previously used materials
- types, uses and limitations of renewable sources of energy
- types, location and use of relevant safety information, such as:
  - job safety analyses (JSA) and safe work method statements

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- environmental and work site safety plans
- safety data sheets (SDS)

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by performing a range of tasks in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- develop an action plan to retrofit and improve the energy efficiency of either one existing residential building or one existing commercial building, providing evidence of the following:
  - engaging in a team environment working with stakeholders across multiple disciplines, such as engaging or leading an integrated project design or delivery of a project
  - research undertaken to identify appropriate products, materials and systems for use in the retro fit
  - evaluation of risks involved in the retro fit and identification of appropriate solutions to avoid risks or hazards to occupants and others
  - written action plan for the retro fit of the building which responds to identified client requirements and expectations, as well as research undertaken into energy efficiency opportunities and recommended systems, materials and products to be used in the retro fit with relevant costings and timelines
- locate, interpret and apply relevant information, standards and specifications to ensure the development of compliant action plans that meet client expectations and organisational policies and procedures
- comply with work health and safety (WHS) legislation, regulations and codes of practice applicable to workplace operations.

Context of and specific

Assessment of this unit:

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resources for assessment

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- research resources, including industry-related systems information
- safety data sheets.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using one or more of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function, such as:

- CPPHSA4001A Assess household energy use

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Client requirements and expectations may include:

- enhanced health and safety outcomes for occupants through improved air quality and selection of materials
- improved building durability
- increased return on investment through higher resale or higher rental income
- reduction in energy bills following retro fit.

Energy assessment:

- can include financial and non-financial benefits of retrofitting the building to improve energy efficiency
- can include recommendations that will improve the energy efficiency of the building
- identifies existing energy rating of a building using a variety of testing and assessment methods.

Information must include:

- energy efficient materials and installation methods
- regulations, codes and standards governing energy efficient construction.

Limitations and obstacles may include:

- budget constraints
- condition of existing building
- local council planning provisions, including land overlays and requirements relating to neighbourhood character
- orientation of the existing building
- original design and construction of existing building
- position of existing services to the building
- presence of protected vegetation adjacent to existing building
- protection of existing building under heritage listing
- proximity of other buildings or structures.

Solutions may include:

- engaging experts in heritage construction to advise on appropriate solutions for heritage listed buildings undergoing energy efficiency upgrades
- repairing parts of the existing structure before commencing energy efficiency retro fit
- repositioning services to the building
- seeking permission from relevant authorities to remove large trees that may inappropriately overshadow the building and reduce energy efficiency opportunities

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- selecting and using economical and effective energy efficient systems and materials.

Risks must include:

- risks associated with completely sealing the building envelope, such as:
  - air pressure differentials
  - combustion
  - moisture and mould
  - poor indoor air quality.

Strategies may include:

- changing light fittings to LEDs
- installing motion sensor lighting
- replacing insulation in ceilings, walls or floors
- sealing building envelope to reduce unwanted air leakage
- sealing openable windows
- repositioning the heating system
- installing solar photovoltaic systems
- replacing electric hot water system with gas or solar hot water system.

Materials may include:

- aerated autoclaved concrete products
- bricks and mortar
- concrete blocks
- insulating materials
- plasterboard
- reflective paints
- slabs
- timber
- window frames and glass.

Final retro-fit action plan must address:

- client expectations
- costings
- material use
- other resourcing
- risk management
- timelines.

Benefits may include:

- improved levels of comfort for the occupants
- increased air changes per hour to improve indoor air quality
- increased durability of the building
- potential for improved return on investment
- reduction in and prevention of mould
- reduction in heating and cooling costs.

Documentation may include:

- applications for permits and service connections
- copies of plans, drawings and specifications
- environmental applications.

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Unit Sector(s)

Construction

Custom Content Section

Not applicable.

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CPCSUS5003A Manage energy efficient building methods and strategies

Modification History

New unit.
This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

Unit Descriptor

This unit of competency specifies the outcomes required to ensure that energy efficient building methods and strategies are supported by employees and contractors working on a new or existing residential or commercial building designed to satisfy energy efficiency ratings and requirements.
The unit provides the skills required to ensure that work undertaken to construct an energy efficient building or to retrofit an existing building for improved energy efficiency is performed as designed and reflects energy efficient specifications.
The unit covers developing a culture of energy efficient work practices.

Application of the Unit

This unit of competency supports builders and site managers overseeing the construction or retro fit of buildings designed to meet energy efficient ratings or improve the energy efficiency characteristics of a building.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan and prepare to construct an energy efficient building.	1.1	***Relevant stakeholders*** are consulted to identify the purpose for which the building is to be used and the energy efficiency expectations of its owners or occupiers.
		1.2	Plans, drawings and specifications are reviewed to identify energy efficient requirements of finished building or works.
		1.3	Project is resourced with appropriately skilled tradespeople with energy efficiency competency.
		1.4	Works to be undertaken are ***scheduled*** to support energy efficient building strategy.
		1.5	***Construction materials and products*** are costed, selected and sourced to conform to and meet energy efficiency expectations of the building or works.
		1.6	Strategies for the disposal or reuse of waste materials are developed for the project.
		1.7	Impact of energy efficient project on timelines and budget is communicated to owner or occupier and other stakeholders.
2	Communicate and monitor energy efficiency awareness among tradespeople.	2.1	Trades and other works on the building project are briefed with expectations for ***techniques to be used***, quality of works to be undertaken, and energy efficiency outcomes required.
		2.2	Sealing of building envelope is assessed for capacity to maximise energy efficiency and improvements are made

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			in sealing the building envelope before other works continue.
		2.3	Requirements to maintain energy efficient techniques are communicated to subsequent trades to ensure benefits of the work are not lost.
		2.4	Alterations to works, construction methods and selected materials are ***evaluated*** against project energy efficiency expectations, and impact on energy efficiency is quantified to assist in decision-making processes.
3	Evaluate and communicate energy efficiency outcomes.	3.1	Works undertaken are assessed for adherence to energy efficiency processes.
		3.2	Hand held thermal imaging assessment of building or works is conducted to determine presence of unwanted heat and air leakages, and findings are addressed where necessary.
		3.3	Duct testing is conducted where appropriate to identify location of leakages and works are implemented to address findings where necessary.
		3.4	External rating of energy efficiency, including star ratings, is sought from recognised expert to verify efficiency of construction.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- learning skills to:
  - evaluate own actions and make judgments about performance and necessary improvements
  - respond to change, such as differences in current work site energy efficiency requirements
- numeracy skills to calculate and confirm correct quantities of materials for work tasks
- oral communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
  - report hazards on the work site, including faults in tools, equipment or materials
  - use language and concepts appropriate to cultural differences
- reading skills to:
  - conduct own research into current building and construction methodologies and new materials technology
  - interpret documentation, including drawings and specifications
  - follow written instructions, procedures and signage
- writing skills to develop reports and recommendations about energy efficient projects

Required knowledge

- approaches to waste management consistent with principles of energy efficiency, including processes for minimising and reusing materials
- benchmarks to meet standards and rating systems (such as star rating) for energy efficiency
- compliance requirements relating to construction materials and methods, including:
  - Australian standards
  - energy efficiency and sustainability requirements in different jurisdictions
  - National Construction Code deemed-to-satisfy requirements
- general construction terminology
- impacts of different climate zones and environmental conditions on the built environment
- performance characteristics and benefits of energy efficiency policies, practices, products and services
- processes for constructing different building types
- processes for evaluating energy efficiencies in buildings

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- theories and principles of energy efficiency applied to buildings and construction processes
- types, uses and limitations of different construction materials
- use and limitations of new and advanced construction materials that improve the energy efficiency of buildings

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed by performing a range of tasks in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person should demonstrate the ability to:

- implement energy efficient building methods and management strategies for two building and construction projects, including:
  - resourcing the project with appropriately skilled tradespeople competent in energy efficient works
  - using energy efficient products and materials aligned with the energy efficient aims for the building envelope
  - clearly communicating to trades and other relevant stakeholders the energy efficiency techniques and strategies to be used in order to achieve building energy expectations
  - conducting appropriate performance testing of the construction to determine adherence to energy efficiency methodologies and techniques
- locate, interpret and apply relevant energy efficiency related compliance requirements applicable to the building and construction projects
- locate, interpret and monitor the application of relevant work health and safety (WHS) legislation, regulations and codes of practice applicable to the work site
- comply with organisational policies and procedures relating to managing energy efficiency building methods and strategies, including standards.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

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Resource implications for assessment include:

- an induction procedure
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- research resources, including industry-related systems information
- safety data sheets.

Method of assessment

Assessment for this unit must verify the practical application of the required skills and knowledge, using one or more of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Guidance information for assessment

This unit could be assessed on its own or in combination with other units relevant to the job function.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Assessment processes and techniques should, as far as is practical, take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate,

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accessibility of the item, and local industry and regional contexts) may also be included.

Relevant stakeholders may include:

- architects
- builders
- building owners or investors
- designers
- developers
- engineers
- facility managers
- occupants.

Construction materials and products may include:

- cladding
- floors
- framing
- heating, ventilation and air conditioning (HVAC) systems
- insulation
- interior and exterior paints
- interior and exterior wall materials
- lights and lighting systems
- plaster
- roof materials
- types and uses of water tanks and recyclable grey water systems
- windows.

Techniques to be used to support energy efficiency may include:

- protecting the air barrier by minimising and sealing gaps using advanced framing techniques to increase construction productivity, reduce thermal bridging and increase operational energy efficiency
- installing insulation on the outside of the frame and in the roof, walls and floor
- reducing the effect of thermal bridging
- selecting appropriately sized HVAC system, which considers the tightness of the structure and incorporates heat or energy recovery systems as appropriate for ventilation
- using air or vapour barriers to ensure the entire building envelope is sealed, separating the inside environment from the outside
- using thicker insulation to improve the building's thermal performance.

Evaluated may involve:

- occupier
- owner or developer
- relevant trades.

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Unit Sector(s)

Construction

Custom Content Section

Not applicable.

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AHCIRG306A Troubleshoot irrigation systems

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers the process of troubleshooting faults and blockages in irrigation systems and defines the standard required to: read and apply system specifications, technical manuals and supply/spare parts inventories; locate and identify faulty components and blockages; apply shutdown sequence and isolation procedures; remove faulty components from the system and install replacements; clear blockages or replace blocked sections; and return isolated or shutdown components to service.

Application of the Unit

Application of the unit	This unit applies to workers on irrigation farms or to irrigation contractors. The work is likely to be carried out under routine supervision within enterprise guidelines.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Not Applicable

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA

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ELEMENT	PERFORMANCE CRITERIA
1. Locate and identify faulty components and blockages	1.1. Irrigation system and component function is determined by reference to system specifications and technical manuals. 1.2. Monitoring and maintenance records are checked and reviewed. 1.3. Operational tests are carried out according to system specifications, technical manuals and Occupational Health and Safety (OHS) requirements. 1.4. Faulty components and blockages are identified and documented according to enterprise policy and procedures.
2. Shut down/isolate component	2.1. Shut own sequence and isolation procedures are applied as required according to system specifications and technical manuals. 2.2. Safe shutdown or isolation is verified. 2.3. Safety/security lock off devices and signage is installed according to enterprise policy and procedures.
3. Replace faulty components and clear blockages	3.1. Access to faulty components and blockages is arranged. 3.2. Faulty components are removed from the system, according to system specifications and technical manuals, and repaired or disposed of in an environmentally responsible way. 3.3. Replaceable components are selected from manufacturer catalogues and procured using enterprise procedures. 3.4. Replacement components are installed to meet system specifications according to technical manuals. 3.5. Replace faulty components and clear blockages are carried out without unnecessary damage to surrounding site and structures. 3.6. Blockages are cleared or blocked sections replaced according to enterprise procedures.
4. Return system to normal operating status	4.1. Isolated or shutdown components are returned to service. 4.2. Operational tests are carried out according to system specifications, technical manuals and OHS requirements. 4.3. System is returned to normal operational set-up. 4.4. Repair activities are reported and recorded according

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ELEMENT	PERFORMANCE CRITERIA
	to enterprise policy and procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- identify adverse environmental impacts of irrigation activities and appropriate remedial action
- operate, maintain and repair irrigation systems
- shut down and isolate components
- replace components
- carry out operational tests
- implement and follow relevant enterprise OHS and environmental policies and procedures
- use literacy skills to read, interpret and follow organisational policies and procedures, follow sequenced written instructions, record information collected accurately and legibly, and select and apply procedures for a range of tasks
- use oral communication skills/language competence to fulfil the job role as specified by the organisation, including questioning techniques, active listening, clarifying information and consulting with supervisors as required
- use numeracy skills to estimate, calculate and record routine workplace measures
- use interpersonal skills to work with and relate to people from a range of cultural, social and religious backgrounds and with a range of physical and mental abilities.

Required knowledge

- identification, characteristics and operation of replaceable components of irrigation systems
- system malfunctions and their likely causes
- environmental impacts of irrigation, using water from any ground or underground source
- purchasing procedures
- isolation procedures
- enterprise policies and procedures
- irrigation, OHS and environmental guidelines.

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy holistically all of the requirements of the performance criteria and required skills and knowledge and include achievement of the following: • read and apply system specifications, technical manuals and supply/spare parts inventories • locate and identify faulty components and blockages • apply shutdown sequence and isolation procedures • remove faulty components from the system and install replacements • clear blockages or replace blocked sections • return isolated or shutdown components to service.
Context of and specific resources for assessment	Competency requires the application of work practices under work conditions. Selection and use of resources for some worksites may differ due to the regional or enterprise circumstances.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole.	
System may include:	• pressurised irrigation systems, such as micro-irrigation, spray irrigation or gravity-fed irrigation systems.

Unit Sector(s)

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Unit sector	Irrigation

Co-requisite units

Co-requisite units		

Competency field

Competency field	

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AHCLSC303A Construct brick and/or block structures and features

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers the process of constructing brick and/or block structures and features and defines the standard required to: interpret site plans and specifications; set out and prepare a landscape construction site; construct landscape structures; check quality of work and clean up site.

Application of the Unit

Application of the unit	This unit applies to constructing brick and/or block structures and features as a component of landscape project works.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Not Applicable

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA

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ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare work	1.1. Plans and specifications are interpreted and clarified with the supervisor. 1.2. The quantity and quality of materials are checked to ensure they conform to design drawings and specifications. 1.3. Tools and equipment are selected and checked for serviceability according to enterprise guidelines. 1.4. Occupational Health and Safety (OHS) hazards are identified, risks assessed and controls implemented. 1.5. Environmental implications of erecting brick and/or block structures are identified and reported to the supervisor.
2. Set out and prepare the site	2.1. Services are determined and located from site plans. 2.2. The position of the structure or feature is marked out according to design drawings and specifications. 2.3. Profiles are established to conform to the tolerances nominated within the design drawings and specifications. 2.4. Subsoil is prepared by removing all debris, vegetable matter and topsoil to provide a solid foundation for construction. 2.5. Drainage systems are installed according to design drawings and specifications. 2.6. Sub-base material is placed and compacted to the required finished levels.
3. Construct structure or feature	3.1. Mortar is mixed to determined ratio and appropriate admixes including bonding and colouring agents are added, as required, and in accordance with specifications. 3.2. Damp proofing and base course of brick and/or block work is laid according to design drawings and specifications. 3.3. Courses of brick and/or block work are laid using designated bond(s) in a manner that will ensure the viability and stability of the structure, and according to design drawings and specifications. 3.4. Finishes are applied to brick or block work in accordance with specifications.
4. Check quality of work and clean up site	4.1. Quality of finished works is inspected to ensure the standard of the finished structure or feature is in accordance with design drawings and specifications. 4.2. Brick and/or block work surfaces are cleaned down

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ELEMENT	PERFORMANCE CRITERIA
	in an environmentally safe and sensitive manner. 4.3. Tools and equipment are cleaned and stored according to enterprise guidelines.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• measure and construct profiles using mathematical techniques • use of levelling equipment • use literacy skills to read, interpret and follow organisational policies and procedures, follow sequenced written instructions, record accurately and legible information collected and select and apply procedures for a range of tasks • use oral communication skills/language competence to fulfil the job role as specified by the organisation, including questioning techniques, active listening, clarifying information and consulting with supervisors as required • use interpersonal skills to work with and relate to people from a range of cultural, social and religious backgrounds and with a range of physical and mental abilities.
Required knowledge
• comparative environmental implications associated with soil disturbance and the establishment of drainage systems • components of mortar, including admixes such as bonding and colouring agents, used in the construction of brick and/or block structures and features.

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy holistically all of the requirements of the performance criteria and required skills and knowledge and include achievement of the following: • interpret site plans and specifications • set out and prepare a landscape construction site • construct landscape structures • check quality of work and clean up site.
Context of and specific resources for assessment	Competency requires the application of work practices under work conditions. Selection and use of resources for some worksites may differ due to the regional or enterprise circumstances.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole.	
Structures and features may include:	• stone, brick or block features such as walling, steps, edgings, walls, fences, BBQ and entertaining areas, and ornamental garden elements not covered by engineering specifications.

Unit Sector(s)

Unit sector	Landscape

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Co-requisite units

Co-requisite units		

Competency field

Competency field	

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AHCLSC307A Implement a retaining wall project

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers the process of implementing a retaining wall project and defines the standard required to: set out and prepare site according to plan specifications; establish survey benchmarks; excavate and profile soil levels; install and assemble components of a retaining wall; use tools and equipment for retaining wall projects; verify completed works meet the design plan and specifications. This standard forms a part of the training and assessment necessary to obtain the industry license.

Application of the Unit

Application of the unit	This unit applies to landscapers involved in the process of implementation of a retaining wall project. The work is likely to be under limited supervision, with checking only related to overall progress.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Not Applicable

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA

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ELEMENT	PERFORMANCE CRITERIA
1. Prepare for retaining wall project	1.1. Requirements of the retaining wall project are clarified with client/supervisor. 1.2. Equipment and material resource requirements are identified according to the scope of the construction work. 1.3. The environmental implications of the proposed work are identified. 1.4. Occupational Health and Safety (OHS) hazards are identified, risks assessed and reported to the supervisor. 1.5. Personal Protective Equipment (PPE) is selected, used and maintained according to procedures 1.6. Delivery of materials to site is organised according to workplace priorities.
2. Mark out site for retaining wall	2.1. Site bunting is erected and safety signage is placed where appropriate. 2.2. Services are determined and located from site plans. 2.3. The position of the retaining wall is marked out according to site and construction plans. 2.4. The location and depth of excavations are determined from site and construction plans. 2.5. Profiles are established to conform to the tolerances designated by the construction plans. 2.6. Survey benchmarks are established.
3. Construct retaining wall	3.1. Retaining wall components are assembled /installed according to plan specifications. 3.2. Appropriate drainage is installed according to plan. 3.3. Tools, equipment and machinery are used safely in accordance with enterprise safe operating procedures and OHS requirements.
4. Check quality of work and clean up site	4.1. Quality of finished works is inspected to ensure the standard of the finished project is in accordance with design drawings and specifications. 4.2. The work site is cleaned down in an environmentally safe and sensitive manner 4.3. Tools and equipment are cleaned and stored according to enterprise guidelines.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- read and interpret documentation associated with retaining wall projects
- calculate material and resource requirements
- establish survey benchmarks
- install and assemble components of a retaining wall
- coordinate a team to achieve optimum performance
- document results clearly and concisely
- identify hazards and assess risk
- use oral communication skills/language competence to fulfil the job role as specified by the organisation, including questioning techniques, active listening, clarifying information and consulting with supervisors as required
- use numeracy skills to estimate, calculate and record routine workplace measures
- use interpersonal skills to work with and relate to people from a range of cultural, social and religious backgrounds and with a range of physical and mental abilities.

Required knowledge

- landscape retaining wall materials
- landscape retaining wall construction techniques
- set out techniques
- work schedule programming
- possible causes of disruption to work activities and their effect on quality and time schedules
- methods and practices for maintaining and repairing retaining walls
- the range, use and availability of materials, equipment and machinery that may be required for the project
- OHS issues, legislative requirements and codes of practice
- state based licensing
- local council regulations
- WorkCover regulations.

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy holistically all of the requirements of the performance criteria and required skills and knowledge and include achievement of the following: • set out and prepare site according to plan specifications • establish survey benchmarks • excavate and profile soil levels • install and assemble components of a retaining wall • use tools and equipment for retaining wall projects • verify completed works meet the design plan and specifications.
Context of and specific resources for assessment	Competency requires the application of work practices under work conditions. Selection and use of resources for some worksites may differ due to the regional or enterprise circumstances.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole.	
Implementation may include:	• materials • tools • equipment • machinery and techniques used to construct retaining walls.

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Unit Sector(s)

Unit sector	Landscape

Co-requisite units

Co-requisite units		

Competency field

Competency field	

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BSBADM506B Manage business document design and development

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to establish standards for the design and production of organisational documents and to manage document design and production processes to ensure agreed standards are met. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals employed in a range of work environments who require well developed skills in the use of a range of software packages. They use these skills to establish, document and implement consistent standards of document design with an organisation.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish documentation standards	1.1. Identify organisational requirements for information entry, storage, output, and quality of ***document*** design and production 1.2. Evaluate organisation's present and future information technology capability in terms of its effect on document design and production 1.3. Identify types of documents used and required by the organisation 1.4. Establish documentation ***standards and design tasks*** for organisational documents in accordance with information, budget and technology requirements
2. Manage template design and development	2.1. Ensure standard formats and templates suit the purpose, audience and information requirements of each document 2.2. Ensure document templates enhance readability and appearance, and meet organisational requirements for style and layout 2.3. Test templates, obtain organisational and user feedback, and make amendments as necessary to ensure maximum efficiency and quality of presentation
3. Develop standard text for documents	3.1. Evaluate ***complex technical functions*** of software for their usefulness in automating aspects of standard document production 3.2. Match requirements of each document with software functions to allow efficient production of documents 3.3. Test macros to ensure they meet the requirements of each document in accordance with documentation standards
4. Develop and implement strategies to ensure the use of standard documentation	4.1. Prepare explanatory notes for the use of standard templates and macros using content, format and language style to suit existing and future users 4.2. Develop and implement training on the use of standard templates and macros and adjust the content and level of detail to suit user needs 4.3. Produce, circulate, name and store master files and print copies of templates and macros in accordance with organisational requirements
5. Develop and implement strategies	5.1. Monitor use of standard documentation templates and macros, and evaluate the quality of documents

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ELEMENT	PERFORMANCE CRITERIA
for maintenance and continuous improvement of standard documentation	produced against documentation standards 5.2. Review documentation standards against the changing needs of the organisation, and plan and implement improvements in accordance with organisational procedures

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to present complex instructions orally, to communicate ideas logically, and to explain technical concepts and designs to others
- literacy skills to:
- read and interpret policies and procedures
- review and select technological designs
- consider aspects of context, purpose and audience when designing and formatting texts
- research and analysis skills to evaluate content, structure and purpose of technical texts, and to adapt task instructions to suit changes in technology
- technological skills to manage design requirements and layouts.

Required knowledge

- cost constraints
- document production processes
- functions of range of software applications, including desktop publishing, word processing and spreadsheets
- key provisions of relevant legislation and regulations from all forms of government, codes and standards that may affect aspects of business operations, such as:
- anti-discrimination legislation
- ethical principles
- codes of practice
- privacy laws
- organisational policies and procedures relating to document design and formatting
- sources of expertise external to the organisation or workgroup.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • designing templates or style sheets for use in document design • documenting processes and strategies to ensure implementation.

Context of and specific resources for assessment	Assessment must ensure:
	• access to office equipment and resources, including:
	  • computer hardware and other document production equipment
	  • range of software applications appropriate to the task
	  • media for production of documents
	• access to samples of high quality standardised documents.

Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • analysis of responses to case studies and scenarios • demonstration of techniques • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • review of authenticated documents from the workplace or training environment • oral or written questioning to assess knowledge of accounting procedures and techniques.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • information and communications technologyunits • other general administration units.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Documents may be created:	• using a range of commercial or organisational software packages:
	  • databases
	  • desktop publishing
	  • spreadsheets
	  • word processing

Standards and design tasks may include:	• binding • binding media • checking final print copy • client requirements • colour photocopy • copying • creating templates and style or procedures manual • drafting • drawing • editing • electronic or paper-based • enterprise policies and procedures • enterprise templates or house style conventions for margins, fonts, use of colour • final document presentation • formatting • language and style of document • liaison with external personnel • locating and collecting appropriate information or precedents • print quality • production of graphics • production of multiple and subsequent copies • quality standards • use of page layout software • writing

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RANGE STATEMENT	
Complex technical functions may include:	• data transfer • display features • embedding • exporting • fields • form fields • formulae • importing • index • linking • macros • merge criteria • sort criteria • table of contents

Unit Sector(s)

Unit sector	

Competency field

Competency field	Administration - General Administration

Co-requisite units

Co-requisite units		

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BSBAUD504B Report on a quality audit

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to report on the outcomes of a quality audit and to take appropriate follow up action. It covers compiling audit results; preparing a report for the auditee/client; negotiating follow up action with the auditee/client; and monitoring and reviewing auditing system and activities. The types of quality audit that may be covered by this unit include an external or internal systems audit or process or product/service audit. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals with well established, sound theoretical knowledge base in quality auditing who are proficient in using a wide range of specialised quality auditing and managerial techniques to carry out their own work and to supervise the quality audit team. The unit addresses the function performed by either an auditor having sole responsibility for the audit or a lead auditor of a quality audit team.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Compile audit results	1.1. Compare ***results*** of audit evaluation against audit objectives and criteria 1.2. Analyse audit results
2. Prepare report	2.1. Provide objective evidence relating to the need for reduction, elimination and prevention of non-conformance as the basis for the ***audit report*** 2.2. Produce audit report according to specified audit requirements 2.3. Present audit report to auditee and other stakeholders
3. Negotiate follow up process with auditee	3.1. Determine and initiate any corrective action required to deal with non-conformance, in consultation with auditee 3.2. Provide suggestions for improvements where applicable 3.3. Ensure time lines are agreed upon for completion of corrective action activities 3.4. Ensure corrective action follow-up procedures are agreed with auditee
4. Monitor and review audit system and activities	4.1. Evaluate effectiveness and suitability in achieving audit objectives 4.2. Investigate possible ***improvements in audit methods***, economy and efficiency

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to listen to and question, clients and other audit team members
- culturally appropriate communication skills to relate to people from diverse backgrounds and abilities
- interpersonal skills to establish rapport with clients and to liaise with other audit team members
- literacy skills to read, write, edit and proofread documents to ensure clarity of meaning, accuracy and consistency of information
- organisational, planning and time management skills to sequence tasks, meet time lines, conduct inspections and arrange meetings
- problem-solving skills to overcome any issues which may potentially affect the auditing process or outcome
- teamwork skills
- technology skills to use a range of equipment required to conduct quality auditing activities.

Required knowledge

- auditing codes of practice or ethics
- auditing methods and techniques
- auditing regulations and standards, including:
  - AS/NZS ISO: 9000:2006: Quality management systems - Fundamentals and vocabulary
  - AS/NZS ISO 19011:2003: Guidelines for quality and/or environmental management systems auditing
- current audit practices
- industry, product and/or service knowledge
- quality auditing principles, techniques and systems
- requirements of house or other style manual protocols for written communications
- relevant legislation affecting business operations including appropriate occupational health and safety, environmental, and privacy legislation
- software applications relevant to conducting quality auditing activities
- terminology relating to quality auditing.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • completion and presentation of audit reports to auditees/clients and stakeholders • negotiations for follow-up actions with auditees/clients • knowledge of auditing regulations and standards.
Context of and specific resources for assessment	Assessment must ensure: • access to workplace documentation including quality audit reports, checklists, risk management plans and audit plans.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • analysis of objective evidence provided in relation to the need for reduction, elimination and prevention of non-conformance • review of audit reports • direct questioning combined with review of portfolios of evidence by third party workplace reports of on-the-job performance by the candidate • analysis of documentation outlining possible improvements in audit methods • observations of interactions with team members, colleagues and auditees • observations of presentations of audit reports to auditees and their organisation • oral or written questioning to assess knowledge of audit report contents • review of corrective action follow-up procedures agreed with auditee.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:

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EVIDENCE GUIDE	
	• other quality auditing units.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Results may include:	• corrective actions to reduce, eliminate and prevent non-conformance • examination and evaluation of controls associated with systems, activities and processes • means of improving processes, systems, products and business results • objective evidence of conformance • objective evidence of non-conformance relating to organisational processes, systems, activities, products and/or services
Audit report may include:	• agreed objectives and scope of audit • audit results • distribution list for the audit report • follow-up required • identification of audit team members • identification of the auditee's representatives • information on confidentiality • outline of the auditing process, including obstacles encountered • retention of auditing records, including work documents • specified audit requirements • timeframe in which audit was conducted
Improvements in audit methods may include:	• assessment of audit results • evaluation of auditor performance • evaluation of the effect of the quality audit outcomes on the auditee's activities, products and/or services • examination of complaints, appeals and other feedback received from auditee • examination of mechanisms by which consistency of audits is achieved • overall evaluation of the methods and

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RANGE STATEMENT	
	effectiveness of the audit organisation • review of the audit reporting process and records

Unit Sector(s)

Unit sector	

Competency field

Competency field	Regulation, Licensing and Risk - Quality Auditing

Co-requisite units

Co-requisite units		

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BSBCUS301B Deliver and monitor a service to customers

Modification History

Release	Comments
Release 1	This version first released with *BSB07 Business Training Package version 6.0* Revised unit. Performance criteria amended so that the learner is not required to 'incorporate evidence of customer satisfaction in decision to modify products or services'. Required skills updated to focus on learning and development practices and compliance with policy and procedures. Replaces BSBCUS301A Deliver and monitor a service to customers

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to identify customer needs and monitor service provided to customers. Operators may exercise discretion and judgement using appropriate theoretical knowledge of customer service to provide technical advice and support to customers over either a short or long term interaction.

Application of the Unit

This unit applies to individuals who are skilled operators and apply a broad range of competencies in various work contexts.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Pre-Requisites

Not applicable.

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Element	Performance Criteria
Elements describe the essential outcomes of a unit of competency.	*Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.*

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Elements and Performance Criteria

1. Identify customer needs	1.1 Use ***appropriate interpersonal skills*** to accurately identify and clarify ***customer needs and expectations*** 1.2 Assess customer needs for urgency to determine priorities for service delivery according to ***organisational requirements*** 1.3 Use ***effective communication*** to inform customers about available choices for meeting their needs and assist in the selection of preferred options 1.4 Identify limitations in addressing customer needs and seek appropriate assistance from ***designated individuals***
2. Deliver a service to customers	2.1 Provide prompt service to customers to meet identified needs in accordance with organisational requirements 2.2 Establish and maintain appropriate rapport with customers to ensure completion of quality service delivery 2.3 Sensitively and courteously handle ***customer complaints*** in accordance with organisational requirements 2.4 Provide assistance or respond to customers with ***specific needs*** according to organisational requirements 2.5 Identify and use available ***opportunities*** to promote and enhance services and products to customers
3. Monitor and report on service delivery	3.1 Regularly review customer satisfaction with service delivery using ***verifiable evidence*** according to organisational requirements 3.2 Identify opportunities to enhance the quality of service and products, and pursue within organisational requirements 3.3 Monitor procedural aspects of service delivery for effectiveness and suitability to customer requirements 3.4 Regularly seek customer feedback and use to improve the provision of products and services 3.5 Ensure reports are clear, detailed and contain recommendations focused on critical aspects of service delivery

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- analytical skills to identify trends and positions of products and services
- communication skills to monitor and advise on customer service strategies
- literacy skills to:
  - edit and proofread texts to ensure clarity of meaning and accuracy of grammar and punctuation
  - prepare general information and papers according to target audience
  - read and understand a variety of texts
- problem-solving skills to deal with customer enquiries or complaints
- technology skills to select and use technology appropriate to a task
- self-management skills to:
  - comply with policies and procedures
  - consistently evaluate and monitor own performance
  - seek learning opportunities.

Required knowledge

- key provisions of relevant legislation from all levels of government that may affect aspects of business operations, such as:
  - anti-discrimination legislation
  - ethical principles
  - codes of practice
  - privacy laws
  - financial legislation
  - occupational health and safety (OHS)
- organisational policy and procedures for customer service including handling customer complaints
- service standards and best practice models
- public relations and product promotion
- techniques for dealing with customers, including customers with specific needs.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • identifying needs and priorities of customers • distinguishing between different levels of customer satisfaction • treating customers with courtesy and respect • responding to and reporting on, customer feedback • knowledge of organisational policy and procedures for customer service.
Context of and specific resources for assessment	Assessment must ensure: • access to an actual workplace or simulated environment • access to office equipment and resources • examples of customer complaints • examples of documents relating to customer service standards and policies.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • review of reports on customer service delivery • analysis of responses to case studies and scenarios • demonstration of techniques • oral or written questioning to assess knowledge of customer service strategies.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Appropriate interpersonal skills may include:	• listening actively to what the customer is communicating • providing an opportunity for the customer to confirm their request • questioning to clarify and confirm customer needs • seeking feedback from the customer to confirm understanding of needs • summarising and paraphrasing to check understanding of customer message • using appropriate body language.
Customers may include:	• corporate customers • individual members of the organisation • individual members of the public • internal or external • other agencies.
Customer needs and expectations may include:	• accuracy of information • advice or general information • complaints • fairness/politeness • further information • making an appointment • prices/value • purchasing organisation's products and services • returning organisation's products and services • specific information.
Organisational requirements may include:	• access and equity principles and practice • anti-discrimination and related policy • defined resource parameters • goals, objectives, plans, systems and processes • legal and organisational policies, guidelines and requirements • OHS policies, procedures and programs • payment and delivery options • pricing and discount policies • quality and continuous improvement processes and

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	standards • quality assurance and/or procedures manuals • replacement and refund policy and procedures • who is responsible for products or services.
Effective communication may include:	• giving customers full attention • maintaining eye contact, except where eye contact may be culturally inappropriate • speaking clearly and concisely • using active listening techniques • using appropriate language and tone of voice • using clear written information/communication • using non-verbal communication e.g. body language, personal presentation (for face-to-face interactions) • using open and/or closed questions.
Designated individuals may include:	• colleagues • customers • line management • supervisor.
Customer complaints may include:	• administrative errors such as incorrect invoices or prices • customer satisfaction with service quality • damaged goods or goods not delivered • delivery errors • product not delivered on time • service errors • warehouse or store room errors such as incorrect product delivered.
Specific needs of customers may relate to:	• age • beliefs/values • culture • disability • gender • language • religious/spiritual observances.
Opportunities to promote and enhance services and products may include:	• extending time lines • packaging procedures • procedures for delivery of goods • returns policy • system for recording complaints • updating customer service charter.
Verifiable evidence may include:	• customer satisfaction questionnaires • audit documentation and reports

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	• quality assurance data • returned goods • lapsed customers • service calls • complaints.

Unit Sector(s)

Stakeholder Relations – Customer Service

Custom Content Section

Not applicable.

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BSBCUS402B Address customer needs

Modification History

Release	Comments
Release 1	This version first released with *BSB07 Business Training Package version 6.0.* Revised unit. Required skills updated to focus on learning and development practices and compliance with policy and procedures. Replaces BSBCUS402A Address customer needs

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to manage the ongoing relationship with a customer, which includes assisting the customer to articulate their needs, meeting customer needs and managing networks to ensure customer needs are addressed. The customer relationship would typically involve direct interaction a number of times over an extended period.
This unit is appropriate to workers who are expected to have detailed product knowledge in order to recommend customised solutions. They would be expected to apply organisational procedures and be aware of, and apply as appropriate, broader factors involving ethics, industry practice and relevant government policies and regulations.

Application of the Unit

This unit applies to workers required to be familiar with a product and service that varies widely and is capable of significant customisation.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Pre-Requisites

Not applicable.

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Element	Performance Criteria
Elements describe the essential outcomes of a unit of competency.	*Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.*

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Elements and Performance Criteria

1. Assist customer to articulate needs	1.1 Ensure ***customer*** needs are fully explored, understood and agreed 1.2 Explain and match available services and products to customer needs 1.3 Identify and communicate ***rights and responsibilities of customers*** to the customer as appropriate
2. Satisfy complex customer needs	2.1 Explain possibilities for meeting customer needs 2.2 Assist customers to evaluate service and/or product options to satisfy their needs 2.3 Determine and prioritise preferred actions 2.4 Identify potential areas of difficulty in customer service delivery and take appropriate actions in a positive manner
3. Manage networks to ensure customer needs are addressed	3.1 Establish ***effective regular communication*** with customers 3.2 Establish, maintain and expand relevant networks to ensure appropriate referral of customers to products and services from within and outside the organisation 3.3 Ensure procedures are in place to ensure that decisions about targeting of customer services are based on up-to-date information about the customer, and the ***products and services*** available 3.4 Ensure procedures are put in place to ensure that referrals are based on the matching of the assessment of customer needs and availability of products and services 3.5 Maintain records of customer interaction in accordance with ***organisational procedures***

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to relate to people from diverse backgrounds and people with diverse abilities.
- information management skills to summarise information verbally and non-verbally
- literacy and numeracy skills to:
  - interpret product and service features or sales data
  - read a variety of texts to prepare general information and papers
  - summarise information obtained from a variety of verbal and non-verbal sources
  - write formal and informal text
- numeracy skills to analyse data, and to compare time lines and promotional costs against budgets
- problem-solving skills to develop solutions unique to a customer
- self-management skills to:
  - comply with policies and procedures
  - seek learning and development opportunities.

Required knowledge

- key provisions of relevant legislation from all levels of government that may affect aspects of business operations, such as:
  - anti-discrimination legislation
  - ethical principles
  - codes of practice
  - privacy laws
  - environmental issues
  - occupational health and safety
- organisational procedures and standards for customer service relationships
- detailed product and service knowledge which may:
  - be of significant breadth so as to propose alternative products and services, or
  - of significant depth so as to propose variations within a limited product and service range.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • assisting customers to articulate their needs • documenting processes used and customer satisfaction with the products/services offered • assisting customers to address their needs.
Context of and specific resources for assessment	Assessment must ensure: • access to an actual workplace or simulated environment • access to office equipment and resources • examples of products/services and promotional strategies.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • review of documentation prioritising preferred actions • analysis of responses to case studies and scenarios • demonstration of techniques • observation of presentations • assessment of written reports • evaluation of communication established with customers • review of customer interaction records.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Customers may include:	• customers with routine or specific requests • in person, computer-based and telephone customers • internal and external customers • people from a range of social, cultural or ethnic backgrounds • people who may be unwell, drug affected or emotionally distressed • people with varying physical and mental abilities • regular and new customers.
Rights and responsibilities of customers may include:	• fulfilment of external obligations • informed consent.
Effective regular communication may include:	• giving customers full attention • handling sensitive and confidential issues • maintaining eye-contact (for face-to-face interactions), except where eye-contact may be culturally inappropriate • speaking clearly and concisely • using active listening techniques • using appropriate language and tone of voice • using clearly written information/communication • using non-verbal communication e.g. body language, personal presentation (for face-to-face interactions) • using open and/or closed questions.
Products and services may include:	• either products or services • goods • ideas • infrastructure • private or public sets of benefits.
Organisational procedures may include:	• procedural manuals • quality systems, standards and guidelines.

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Unit Sector(s)

Stakeholder Relations – Customer Service

Custom Content Section

Not applicable.

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BSBCUS501C Manage quality customer service

Modification History

Release	Comments
Release 1	New release of this Qualification released with *version 6 of BSB07* Business *Services Training Package*. Revised unit. Required skills updated to focus on learning and development practices and compliance with policy and procedures.

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to develop strategies to manage organisational systems that ensure products and services are delivered and maintained to standards agreed by the organisation.
Operators may have staff involved in delivering customer service and are responsible for the quality of their work. In many instances the work will occur within the organisation's policies and procedures framework. At this level, the exercise of considerable discretion and judgement, using a range of problem solving and decision making strategies, will be required.

Application of the Unit

Many managers are involved in ensuring that products and services are delivered and maintained to standards agreed by the organisation.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Element	Performance Criteria
Elements describe the essential outcomes of a unit of competency.	*Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.*

Elements and Performance Criteria

1. Plan to meet internal and external customer requirements	1.1 Investigate, identify, assess, and include the needs of ***customers*** in planning processes 1.2 Ensure plans achieve the ***quality***, time and cost specifications agreed with customers
2. Ensure delivery of quality products and services	2.1 Deliver ***products and services*** to customer specifications within organisation's business plan 2.2 Monitor team performance to consistently meet the organisation's quality and delivery standards 2.3 Assist colleagues to overcome difficulty in meeting customer service standards
3. Monitor, adjust and review customer service	3.1 Develop and use ***strategies*** to monitor progress in achieving product and/or service targets and standards 3.2 Develop and use strategies to obtain customer feedback to improve the provision of products and services 3.3. Develop, procure and use ***resources*** effectively to provide quality products and services to customers 3.4 Make decisions to overcome problems and to adapt customer services, products and service delivery in consultation with appropriate individuals and groups 3.5 Manage records, reports and recommendations within the organisation's systems and processes

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- analytical skills to identify trends and positions of products and services
- communication skills to:
  - coach and mentor staff and colleagues
  - monitor and advise on customer service strategies
- literacy skills to:
  - edit and proofread texts to ensure clarity of meaning and accuracy of grammar and punctuation
  - prepare general information and papers according to target audience
  - read and understand a variety of texts
- problem-solving skills to:
  - deal with customer enquiries or complaints
  - deal with complex and non-routine difficulties
- technology skills to select and use technology appropriate to a task
- self-management skills to:
  - comply with policies and procedures
  - consistently evaluate and monitor own performance
  - seek learning opportunities.

Required knowledge

- key provisions of relevant legislation from all levels of government that may affect aspects of business operations, such as:
  - anti-discrimination legislation
  - Australian consumer law
  - ethical principles
  - codes of practice
  - privacy laws
  - financial legislation
  - occupational health and safety (OHS)
- organisational policy and procedures for customer service including handling customer complaints
- service standards and best practice models
- public relations and product promotion
- techniques for dealing with customers, including customers with specific needs
- techniques for solving complaints including the principles and techniques involved in the management and organisation of:
  - customer behaviour
  - customer needs research
  - customer relations
  - ongoing product and/or service quality
  - problem identification and resolution

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- quality customer service delivery
- record keeping and management methods
- strategies for monitoring, managing and introducing ways to improve customer service relationships
- strategies to obtain customer feedback.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • plans, policies or procedures for delivering quality customer service • demonstrated techniques in solving complex customer complaints and system problems that lead to poor customer service • knowledge of techniques for solving complaints.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • assessment of written reports • demonstration of techniques • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • observation of performance in role plays • evaluation of leadership, supervision, coaching and mentoring used to assist colleagues to overcome difficulty in meeting customer service standards • review of strategies developed and used to monitor progress in achieving product and/or service targets and standards • review of records, reports and recommendations about managing customer service.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

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Range Statement

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Customers may be:	• Board members • clients, purchasers of services • co-workers, peers and fellow frontline managers • members of the general public who make contact with the organisation, such as prospective purchasers of services • potential funding bodies • supervisors • suppliers of goods and services and contractors providing goods and services.
Quality may refer to:	• characteristics of a product, system, service or process that meet the requirements of customers and interested parties.
Products and services may include:	• either products or services • goods • ideas • infrastructure • private or public sets of benefits.
Strategies may refer to:	• databases and other controls to record and compare data over time • electronic feedback mechanisms using intranet, internet and email • feedback forms and other devices to enable communication from customers • long-term or short-term plans for monitoring achievement and evaluating effectiveness • policies and procedures • questionnaires, survey and interviews • training and development activities.
Resources may include:	• buildings/facilities • equipment • finance • information • people • power/energy

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	• technology • time.

Unit Sector(s)

Stakeholder Relations – Customer Service

Custom Content Section

Not applicable.

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BSBFIM501A Manage budgets and financial plans

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to undertake financial management within a work team in an organisation. This includes planning and implementing financial management approaches, supporting team members whose role involves aspects of financial operations, monitoring and controlling finances, and reviewing and evaluating effectiveness of financial management processes in line with the financial objectives of the work team and the organisation. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit addresses the requirement for managers to ensure that financial resources are used effectively. This is done by ensuring access to budget/s and ongoing monitoring expenditure against the budget/s. The unit applies to managers working in small and large business environments and not for profit organisations.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan financial management approaches	1.1. Access ***budget/financial plans*** for the work team 1.2. Clarify budget/financial plans with ***relevant personnel*** within the organisation to ensure that documented outcomes are achievable, accurate and comprehensible 1.3. Negotiate any changes required to be made to budget/financial plans with relevant personnel within the organisation 1.4. Prepare ***contingency plans*** in the event that initial plans need to be varied
2. Implement financial management approaches	2.1. Disseminate relevant details of the agreed budget/financial plans to team members 2.2. Provide ***support*** to ensure that team members can competently perform ***required roles*** associated with the management of finances 2.3. Determine and access ***resources and systems*** to manage financial management processes within the work team
3. Monitor and control finances	3.1. Implement ***processes*** to monitor actual expenditure and to control costs across the work team 3.2. Monitor expenditure and costs on an agreed cyclical basis to identify cost variations and expenditure overruns 3.3. Implement, monitor and modify contingency plans as required to maintain financial objectives 3.4. ***Report*** on budget and expenditure in accordance with organisational protocols
4. Review and evaluate financial management processes	4.1. Collect and collate for analysis, ***data and information on the effectiveness of financial management processes*** within the work team 4.2. Analyse data and information on the effectiveness of financial management processes within the work team and identify, document and recommend any improvements to existing processes 4.3. Implement and monitor agreed improvements in line with financial objectives of the work team and the organisation

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• numeracy skills to read and understand a budget and to update a budget • technology skills to use software associated with financial record keeping.
Required knowledge

• basic accounting principles
• organisational requirements related to financial management
• relevant legislation and current requirements of the Australian Taxation Office, including GST
• requirements for organisational record keeping and auditing
• principles and techniques involved in:
  • budgeting
  • cash flows
  • electronic spreadsheets
  • GST
  • ledgers and financial statements
  • profit and loss statements.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • financial skills required to work with and interpret budgets, ageing summaries, cash flow, petty cash, GST, and profit and loss statements • knowledge of the record keeping requirements for the ATO and for auditing purposes.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • assessment of written reports indicating broad knowledge of managing budgets and managing financial resources in the organisation • demonstration of techniques using financial record keeping software • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • oral or written questioning to assess knowledge of requirements for organisational record keeping and auditing • review of contingency plans • review of identification of cost variations and expenditure overruns • evaluation of documentation reportingon budget and expenditure • review of documentation identifying and recommending improvements to financial management processes.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:

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EVIDENCE GUIDE	
	• other units from the Diploma of Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Budget/financial plans may include:	• cash flow projections • long-term budgets/plans • operational plans • short-term budgets/plans • spreadsheet-based financial projections • targets or key performance indicators for production, productivity, wastage, sales, income and expenditure
Relevant personnel may include:	• financial managers, accountants or financial controllers • supervisors, other frontline managers
Contingency plans may include:	• contracting out or outsourcing human resources and other functions or tasks • diversification of outcomes • finding cheaper or lower quality raw materials and consumables • increasing sales or production • recycling and re-using • rental, hire purchase or alternative means of procurement of required materials, equipment and stock • restructuring of organisation to reduce labour costs • risk identification, assessment and management processes • seeking further funding • strategies for reducing costs, wastage, stock or consumables • succession planning
Support may include:	• access to specialist advice • documentation of procedures • help desk or identified experts within the organisation • information briefings or sessions

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RANGE STATEMENT	
	• intranet-based information • training including mentoring, coaching and shadowing
Required roles may include:	• arranging for use of corporate credit cards • banking • debt collection • ensuring security, accuracy and currency of financial operations • invoicing clients, customers and consumers • maintaining journals, ledgers and other record keeping systems • maintaining petty cash system • purchasing and procurement • wages and salaries payments and record keeping
Resources and systems may include:	• hardware and software • human, physical or financial resources • record keeping systems (electronic and paper-based) • specialist advice or support

Processes to monitor actual expenditure and to control costs across the work team include:	• reporting of:
	  • assets
	  • consumables
	  • equipment
	  • expenditure
	  • income
	  • stock
	  • wastage

Reporting may include data from:	• bank statements • credit card statements • financial reports • invoices and receipts • ledgers and journals • logs • petty cash records • spreadsheet-based records
Data and information on the effectiveness of financial management processes may include records (paper-based and	• bank account records • cash flow data • contracts

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RANGE STATEMENT	
electronic) related to:	• credit card receipts • employee timesheets • files of paid purchase and service invoices • income and expenditure • insurance reports • invoices • job costings • petty cash receipts • quotations • taxation records • wages/salaries books

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Management

Co-requisite units

Co-requisite units		

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BSBHRM402A Recruit, select and induct staff

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to execute tasks associated with the recruitment cycle. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals with a role in recruitment, selection and induction functions who work under the direction of a human resources manager. It is not assumed that the individuals addressed by this unit have staff who report to them, although this may be the case. Performance of the work described in this unit will be underpinned by in depth knowledge of the work of the organisation, and how recruitment and selection practices fit with other human resource functions.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine job descriptions	1.1. Clarify time lines and requirement for appointment 1.2. Assist with preparation of ***job descriptions*** which accurately reflect the role requirements in accordance with organisational procedures and ***legislation***, ***codes and national standards*** and ***occupational health and safety*** (***OHS***) ***considerations*** 1.3. Consult with relevant personnel about job descriptions 1.4. Ensure that job descriptions do not contravene legislative requirements 1.5. Obtain approvals to advertise position
2. Plan for selection	2.1. ***Advertise*** vacancies for ***staffing requirements*** in accordance with organisational policies and procedures 2.2. Consult with relevant personnel to convene selection panel and to develop interview questions 2.3. Short list applicants 2.4. Ensure that interview questions do not breach legislative requirements 2.5. Schedule interviews and advise relevant personnel of times, dates and venues
3. Assess and select applicants	3.1. Participate in interview process and assess candidates against agreed selection criteria 3.2. Discuss assessment with other selection panel members 3.3. Correct any biases or deviations from agreed procedures and negotiate for preferred candidate 3.4. Contact referees for referee reports 3.5. Prepare selection report and make recommendations to senior personnel for appointment 3.6. Advise unsuccessful candidates of outcomes and respond to any queries 3.7. Complete all necessary documentation in accordance with organisational procedures 3.8. Secure agreement of preferred candidate
4. Appoint and induct successful candidate	4.1. Provide successful candidate with employment contract and other documentation 4.2. Advise managers and staff of starting date and make

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ELEMENT	PERFORMANCE CRITERIA
	necessary administrative arrangements for pay and employee record keeping 4.3. Advise manager and work team of new appointment 4.4. Arrange induction in accordance with organisational policy

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• communication skills to use networks to source suitable applicants, to listen to and understand what is being said in interviews, and to advise on the outcomes of the selection process • literacy skills to work with job descriptions to devise suitable questions for interviews, to prepare letters for unsuccessful applicants and to make job offers • organising and scheduling skills to arrange interviews and venues.
Required knowledge
• documentation required for recruitment and selection • human resource functions, human resource life cycle and the place of recruitment and selection in that life cycle • principles of equity, diversity and relevant legislation. • range of interviewing techniques and other selection processes and their application.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • demonstrated ability to work with job descriptions to source and select suitable staff • interviewing and other selection techniques that demonstrate awareness off equal opportunity and anti-discrimination requirements • knowledge of the human resource life cycle.
Context of and specific resources for assessment	Assessment must ensure: • access to an appropriate range of documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • analysis of responses to case studies and scenarios • assessment of written reports on recruitment and selection • demonstration of selection techniques • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • observation of interviewing techniques • review of advertisements for staffing vacancies • review of documentation provided to successful candidate • oral or written questioning to assess knowledge of selection processes.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Certificate IV in Human Resources.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Job descriptions may include:	• attributes • competencies required by staff • job or person specifications • job title and purpose of position • necessary skills and knowledge • qualifications • selection criteria • tasks or duties associated with the position
Legislation, codes and national standards may include:	• award and enterprise agreements, and relevant industrial instruments • relevant industry codes of practice • relevant legislation from all levels of government that affects business operation, especially in regard to OHS and environmental issues, equal opportunity, industrial relations and anti-discrimination
Occupational health and safety (OHS) considerations may include:	• establishment and maintenance of OHS training, records, induction processes • performance against OHS legislation and organisation's OHS system, especially policies, procedures and work instructions
Advertising may include:	• electronic or print • internal or external • outsourcing
Staffing requirements may include:	• permanent, temporary, full-time, part-time or casual

Unit Sector(s)

Unit sector	

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Competency field

Competency field	Workforce Development - Human Resource Management

Co-requisite units

Co-requisite units		

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BSBHRM509A Manage rehabilitation or return to work programs

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to process and analyse both workers compensation and sick leave claims. It also covers the establishment of rehabilitation needs and return to work programs, and their monitoring, ongoing review and evaluation. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to human resources managers or specialists who manage claims and ensure that the organisation provides appropriate support for the worker. Note that the unit does not in any way address the process of curing the worker of their injury or illness as this is the task of the health professional. Instead the unit focuses on the process of dealing with claims and ensuring that the organisation supports the worker through return to work programs. In large organisations this work may be a full time role for some people, in smaller organisations it would typically be a part of a broader role with a human resources focus.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Analyse claims	1.1. Ensure that the organisation has and maintains a current Workers' Compensation insurance policy (or equivalent) as required by the applicable legislation 1.2. Process ***claims*** in accordance with organisational policies, and legal and insurance requirements 1.3. Dispute claims where insurer or organisational requirements are not met 1.4. Notify ***rehabilitation provider*** in accordance with organisational procedures 1.5. Advise claimants as to whether their claim has been accepted 1.6. Analyse claims to identify the nature of the illness/injury and prepare report/s 1.7. Identify projected period of absence and where rehabilitation assistance is required, and ensure arrangements are made in the work team to deal with absence
2. Establish rehabilitation/return to work program	2.1. Ensure consultation occurs between rehabilitation provider and treating doctor 2.2. Ensure consultation occurs between rehabilitation provider, relevant managers and employee 2.3. Consider job redesign, reduced hours and ***alternative duties*** in the light of medical advice 2.4. Design a rehabilitation/return-to-work program to achieve a successful return-to-work 2.5. Obtain approval for return-to-work program by relevant managers 2.6. Establish rehabilitation program with employee 2.7. Undertake ***risk analysis*** in relation to proposed program and ***mitigate*** risk where appropriate 2.8. Commence program as close to the time of the accident/illness as possible
3. Monitor/evaluate rehabilitation/ return to work program	3.1. Encourage regular feedback/communication between provider, supervising manager and employee 3.2. Organise regular contact and support between provider and employee 3.3. Identify breaches of the return-to-work program and take remedial action promptly 3.4. Refer return-to-work program to ***workers***

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ELEMENT	PERFORMANCE CRITERIA
	compensation authorities where breaches occur 3.5. Modify return-to-work program where appropriate if it is not delivering the required outcomes 3.6. ***Evaluate*** each rehabilitation/return-to-work program at its conclusion and implement recommendations for system improvement where appropriate

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• communications skills to discuss health matters sensitively with a range of people and to represent the employer for disputed claims • negotiation skills to negotiate disputed claims • organisational and administrative skills to see that all claims are properly processed and that claimant is clear about what is happening and what to expect.
Required knowledge
• rehabilitation concepts and return-to-work procedures • relevant legislation from all levels of government that affects business operation, especially in regard to workers compensation, occupational health and safety and environmental issues, equal opportunity, industrial relations and anti-discrimination • workers compensation tribunal procedures.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • critical analysis of the organisation's rehabilitation return-to-work programs • assessment of the strengths and weaknesses of the organisation's approach to rehabilitation return-to-work programs • knowledge of relevant legislation.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • analysis of responses to case studies and scenarios • assessment of written reports • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • observation of performance in role plays • oral or written questioning to assess knowledge of workers compensation tribunal procedures • review of risk analysis undertakenof a proposed return-to-work program • evaluation of contact and support organised between provider and employee.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Diploma of Human Resource Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Claims may include:	• sick leave claim/application • workers compensation claims
Rehabilitation provider may be any authorised health professional including:	• case managers • counsellors or psychotherapists • pain or injury management specialists • physiotherapists
Alternative duties may include:	• limited range of duties in their normal job • new position • specific tasks which will not aggravate the injury or condition
Risk analysis means:	• determination of the likelihood of a negative event preventing the organisation meeting its objectives and the likely consequences of such an event on organisational performance
Mitigation means:	• action taken to reduce or eliminate risk identified
Workers compensation authorities means:	• relevant body, court, tribunal or commission having jurisdiction in respect to workers compensation matters
Evaluation means:	• determining the extent to which the program meets its objective in respect to timeframes, success rates, cost and impact on the organisation

Unit Sector(s)

Unit sector	

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Competency field

Competency field	Workforce Development - Human Resource Management

Co-requisite units

Co-requisite units		

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BSBINN301A Promote innovation in a team environment

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to be an effective and pro active member of an innovative team. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies individuals who play a pro active role in demonstrating, encouraging or supporting innovation in a team environment. The individual may be a team participant or a team leader. The team may 'make itself' or be constructed by others. It may have core members and members who participate at certain times or for particular purposes. It may be permanent or temporary, or come together at different times to work on specific projects. The team could consist of a team of contractors/freelancers, permanent staff, clients and service providers, or any combination of these groups. It may operate within an organisation or across several organisations - or simply across a group of individuals. The key focus of the unit is on what makes for an innovative team, what keeps it working well, how the structure of work can make a difference and what skills and knowledge are needed to maximise opportunities for innovation. Where a greater focus on team leadership is required this unit should be combined with units such as BSBLED401A Develop teams and individuals.

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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Create opportunities to maximise innovation within the team	1.1. Evaluate and reflect on ***what the team needs and wants to achieve*** 1.2. Check out ***information about current or potential team members' work*** in the context of developing a more innovative team 1.3. Bring people into the team or make suggestions for team members based on what needs to be achieved and the potential for cross-fertilising ideas 1.4. Acknowledge, respect and discuss the ***different ways that different people may contribute*** to building or enhancing the team
2. Organise and agree effective ways of working	2.1. Jointly establish ***ground rules*** for how the team will operate 2.2. Agree and communicate responsibilities in ways that encourage and reinforce ***team-based innovation*** 2.3. Agree and share tasks and activities to ensure the best use of skills and abilities within the team 2.4. Plan and schedule activities to allow time for thinking, challenging and collaboration 2.5. Establish personal reward and stimulation as an integral part of the team's way of working
3. Support and guide colleagues	3.1. Model ***behaviour that supports innovation*** 3.2. Seek ***external stimuli and ideas*** to feed into team activities 3.3. Pro-actively share information, knowledge and experiences with other team members 3.4. Challenge and test ideas within the team in a positive and collaborative way 3.5. Pro-actively discuss and explore ideas with other team members on an ongoing basis
4. Reflect on how the team is working	4.1. De-brief and reflect on activities and on opportunities for improvement and innovation 4.2. Gather and use feedback from within and outside the team to generate discussion and debate 4.3. Discuss the ***challenges of being innovative*** in a constructive and open way 4.4. Take ideas for improvement, build them into future activities and communicate key issues to relevant colleagues 4.5. Identify, promote and celebrate successes and

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ELEMENT	PERFORMANCE CRITERIA
	examples of successful innovation

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• communication skills to work collaboratively as part of a team, to provide guidance and support to others, and to participate in open and constructive discussions • creative thinking skills to generate, explore, test and challenge ideas • learning skills to stretch boundaries of own knowledge and skills • literacy skills to analyse a wide range of information from varied sources • planning and organisational skills to participate in the effective allocation of work in a team context • problem-solving skills to work constructively to overcome issues and challenges of both a practical and conceptual nature and to make ideas become realities • self-management skills to take a pro-active team role and to reflect on own performance in modelling and encouraging behaviour that supports innovation.
Required knowledge
• barriers to innovation that can occur within a team and broader barriers that sometimes hinder innovation • broad concepts of innovation including what innovation is, different types of innovation and the benefits of innovation • characteristics of teams that are more likely to be innovative and characteristics of broader environments that support and encourage innovation • different roles that people may play within a team, how this impacts on the way a team works and what it might achieve • group dynamics in a team.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • active participation in a team where the team takes a pro-active and considered approach to innovation and innovative practice • collaborative and open communication within the team • knowledge and understanding of the internal and external factors that contribute to a team becoming and remaining innovative.
Context of and specific resources for assessment	Assessment must ensure: • demonstration of skills as part of a team.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • direct observation of team interactions • evaluation of reports by the candidate or the team (could be oral or written) discussing the ideas, challenges and opportunities associated with teams, and how they can be more innovative • evaluation of feedback from other people in the team about the candidate's communication approaches and abilities • oral or written questioning to assess knowledge of the characteristics of innovative teams, innovation concepts more broadly and they ways in which innovation can be encouraged • review of jointly established 'groundrules' for how the team will operate.
Guidance information for assessment	Innovation does not occur in isolation. Holistic assessment with other units relevant to the industry sector, workplace and job role is highly recommended.

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Range Statement

RANGE STATEMENT	
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What the team needs and wants to achieve may relate to:	• addressing particular customer feedback • conceiving and implementing a particular project • developing new services or products • generating ongoing ideas within the work unit • improving budgetary performance • improving or changing work conditions • new ideas that impact beyond the workplace (e.g. that have a broader social or community impact)
Information about current or potential team members' work may relate to:	• interests • lifestyle preferences • past jobs • technical strengths • work preferences • working styles
Different ways that different people may contribute may relate to individual strengths around:	• creating positive energy within the team • fundamental literacy strengths (e.g. particularly strong in visual literacy, written or spoken communication) • generating ideas • networks or spheres of influence • particular ways of thinking • powers of persuasion • problem-solving capacities • specific technical skills or knowledge
Ground rules may relate to:	• boundaries or lack of boundaries for team activities and ideas • confidentiality • copyright, moral rights or intellectual property • regularity of communication • key roles and responsibilities • time lines

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RANGE STATEMENT	
	• ways of communicating
Team-based innovation may be encouraged through:	• accessing training and learning opportunities • enough but not too much guidance and structure • equitable sharing of workload • follow-through with ideas • supportive communication
Behaviour that supports innovation may include being:	• collaborative • equitable • fair • fun • hardworking • reflective • responsible • sympathetic
External stimuli and ideas might be from:	• Australia or overseas • colleagues outside of the team • family and friends • internet • journals • networks or technical experts • other organisations
Challenges of being innovative may relate to:	• budgetary or other resource constraints • competing priorities • organisational culture • problems with breaking old patterns of behaviour or thinking • time pressures

Unit Sector(s)

Unit sector	

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Competency field

Competency field	Creativity and Innovation - Innovation

Co-requisite units

Co-requisite units		

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BSBINN502A Build and sustain an innovative work environment

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to create an environment that enables and supports the application of innovative practice. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals working in leadership or management roles in any industry or community context. The individual could be employed by the organisation, but may also be an external contractor, the leader of a cross organisation team or of a self formed team of individuals. The work group could be permanent or temporary in nature. The unit focuses on the skills and knowledge required to develop and implement a holistic approach to the integration of innovation across all areas of work practice. It also acknowledges the importance of wider contextual evaluation for potential innovations to ensure their value and benefit.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Lead innovation by example	1.1. Make innovation an integral part of ***leadership and management activities*** 1.2. Demonstrate positive reception of ideas from others and provide constructive advice 1.3. Establish and maintain relationships based on mutual respect and trust 1.4. Take considered ***risks*** to open up opportunities for innovation 1.5. Regularly evaluate own approaches for consistency with the wider organisational or project context
2. Establish work practices that support innovation	2.1. Consult on and establish ***working conditions*** that reflect and encourage innovative practice 2.2. Introduce and maintain ***workplace procedures*** that foster innovation and allow for rigorous ***evaluation of innovative ideas*** 2.3. Facilitate and participate in ***collaborative work arrangements*** to foster innovation 2.4. Build and lead teams to work in ***ways that maximise opportunities for innovation***
3. Promote innovation	3.1. Acknowledge suggestions, improvements and innovations from all colleagues 3.2. Find appropriate ***ways of celebrating and promoting innovation*** 3.3. Promote and reinforce the value of innovation according to the vision and objectives of the organisation or project 3.4. Promote and support the evaluation of innovative ideas within the wider organisational or project context
4. Create a physical environment which supports innovation	4.1. Evaluate the ***impact of the physical environment*** in relation to innovation 4.2. Collaborate with colleagues about ideas for enhancing the physical work environment before taking action 4.3. Consider potential for supporting innovation when selecting physical resources and equipment 4.4. Design, fit-out and decorate workspaces to encourage creative mindsets, collaborative working and the development of positive workplace relationships

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ELEMENT	PERFORMANCE CRITERIA
5. Provide learning opportunities	5.1. Pro-actively share relevant information, knowledge and skills with colleagues 5.2. Provide or encourage ***formal and informal learning opportunities*** to help develop the skills needed for innovation 5.3. Create opportunities in which individuals can learn from the experience of others

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- communication, consultation and negotiation skills to model and lead, open and collaborative relationships
- comprehension skills to interpret and develop information that may deal with complex ideas and relate to issues both within and outside a given workplace context
- planning and organisational skills to implement wide-ranging practical processes and procedures that support innovation
- problem-solving skills to assess and respond to challenges and risks around innovation at an operational management level
- self-management and learning skills to evaluate and enhance personal effectiveness, and to promote a culture of ongoing learning and development.

Required knowledge

- benefits of providing coaching and learning opportunities in relation to innovation
- concept of innovation, what it is and what it means for different people either working independently or within an organisation
- context for innovation in the relevant workplace context including core business values, overall objectives, broader environmental context and the need to ensure the value and benefit of innovative ideas and projects
- different ways of rewarding performance
- factors and tools that can motivate individuals to use creative thinking and apply innovative work practices
- legislative framework that impacts on operations in the relevant workplace context
- management principles and leadership styles, including the impact of different approaches on innovation
- typical challenges and barriers to innovation within teams and organisations, and ways of overcoming these
- ways in which workplace climate can affect individual attitudes and performance.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • establishment of procedures and practices (for a project or a workplace) which support and foster innovative work practice and include sound evaluation processes • modelling of behaviour that supports innovative work practice • knowledge and understanding of the role of leaders and managers in encouraging innovation, and the issues and challenges associated with building and sustaining an innovative work environment.
Context of and specific resources for assessment	Assessment must ensure: • involvement of a team for which the candidate provides leadership and guidance.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • evaluation of outcomes and processes from activities managed by the candidate, particularly in relation to how innovation and innovative practice was encouraged and supported • oral or written questioning to assess knowledge of ways that innovation can be fostered and the typical challenges and barriers to innovation.
Guidance information for assessment	Innovation does not occur in isolation. Holistic assessment with other units relevant to the industry sector, workplace and job role is highly recommended.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Leadership and management activities may include:	• people management practices • planning processes • regular management meetings • review processes
Risks may include:	• budgetary issues • challenging changes in relationships, work practices and general workplace climate • unforseen impacts of innovative ideas
Working conditions may include:	• family-friendly leave entitlements • flexible working hours • social leave • study leave • time provided for coming up with ideas
Workplace procedures may relate to:	• briefing processes • client relations • performance management • project management • staff meetings • training
Evaluation of innovative ideas may relate to:	• analysing consistency with overall goals, values or vision • assessing resource requirements and practicalities • assessing the potential to find 'champions' or supporters • evaluating the external factors that may impact on the idea • exploring the implications of ideas that may stretch or change existing ways of doing things
Collaborative work arrangements might be:	• cross section • vertical teams • within a section • working with supplier organisations or partner

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RANGE STATEMENT	
	organisations
Ways that maximise opportunities for innovation may relate to:	• collaborating • collecting data • creative thinking • future scanning • getting feedback • making suggestions • networking
Ways of celebrating and promoting innovation may include:	• congratulating the project team • ensuring management acknowledgment • providing a newsletter story about the idea • using the idea to help foster other ideas • well-planned group incentive schemes
Impact of the physical environment may relate to:	• eating areas • extent to which design or style links with declared philosophies or objectives • external areas • general ambience of the work environment • location of different people • presence and ambience of relaxation areas • style of dÃ©cor • use of creative messages or images in the workplace • workspace design and dÃ©cor • workstation arrangements and opportunities for interaction
Formal and informal learning opportunities may include:	• coaching • conferences • formal training courses/programs • information seminars • job rotation • mentoring • online learning

Unit Sector(s)

Unit sector	

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Competency field

Competency field	Creativity and Innovation - Innovation

Co-requisite units

Co-requisite units		

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BSBITA401A Design databases

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to design and develop a database (including queries, forms and reports) to meet a defined need using existing data. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals employed in a range of work environments who create databases to store and retrieve data using commercially available database software. They may provide administrative support within an enterprise, or may be independently responsible for designing databases relevant to their own work roles.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Design database	1.1. Review ***organisational and task requirements*** to confirm ***scope and functionality of database*** design, including data redundancy 1.2. Develop a logical data model to identify and classify data into types 1.3. Select appropriate ***software*** according to organisational and task requirements and required scope and functionality of database 1.4. Confirm database design with ***appropriate person***
2. Develop database	2.1. Set field attributes according to data type and link databases by a common field in accordance with software procedures 2.2. Identify primary key to uniquely identify data 2.3. Identify foreign keys to establish associations between data 2.4. Use ***software functions*** and ***formulae*** to meet organisational and task requirements 2.5. Create password and access system according to organisational and task requirements
3. Develop queries, forms and reports	3.1. Develop queries as required by organisational and task requirements 3.2. Develop input screens or forms in order to access required data 3.3. Develop reports according to organisational and task requirements
4. Test and finalise database	4.1. Populate database with sample dataset for testing 4.2. Assess and document effectiveness of data relationships, queries forms and reports 4.3. Address any errors in database design 4.4. ***Name and store*** database in accordance with organisational requirements and exit the application without data loss or damage 4.5. Confirm database readiness with appropriate person

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- literacy skills to interpret and evaluate the purposes and features of databases
- numeracy skills to utilise software functions and formulae, and to establish data relationships and queries
- planning and organising skills to establish database design
- problem-solving skills to address inconsistencies in database design and data relationships.

Required knowledge

- advanced functions of database software applications
- impact of formatting and design on the presentation and readability of data
- key provisions of relevant legislation from all forms of government, standards and codes that may affect aspects of business operations, such as:
  - anti-discrimination legislation
  - ethical principles
  - codes of practice
  - privacy laws
  - occupational health and safety.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • producing a database containing a minimum of three tables and incorporating queries, reports and forms • knowledge of advanced functions of database software app.
Context of and specific resources for assessment	Assessment must ensure: • access to office equipment and resources • access to sample data.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • review of databasedesign • review of database testing • demonstration of techniques.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • IT use units • other IT analysis and design units.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Organisational and task requirements may include:	• business requirements • consistent corporate image, including colour schemes and company logo • established guidelines and procedures for data usage • existing database templates • final output requirements for data • house styles • observing copyright legislation • organisation name, time, date, document title, filename or other fields in headers and footers • technical operating environment and platform
Scope and functionality of database may include:	• concurrency of access requirements • data relationships • data structures • forms • queries • reports • screens • security features • table relationships
Software may include:	• commercial software applications • organisational specific software
Appropriate person may include:	• clients • colleagues • supervisors
Software functions may include:	• adding, deleting, moving, re-labelling fields • altering field widths • calculations, formula • data protection • field definitions and attributes • formatting fields

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RANGE STATEMENT	

	• formatting text
	• headers and footers
	• inserting and deleting blank lines and spaces
	• macros
	  • append
	  • delete
	  • edit
	  • exit
	  • list
	  • print
	  • query
	  • report
	• repeating (if available)
	• table, form and report wizards

Formulae may include:	• formulae • addition • average • combinations of formulae • count • division • maximum • minimum • multiplication • subtraction • sum
Naming and storage may include:	• authorised access • filing locations • organisational policy for backing up files • organisational policy for filing hard copies of spreadsheets • security • storage in folders and sub-folders • storage on disc drives, CD-ROM, USBs, tape or server back-up

Unit Sector(s)

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Unit sector	

Competency field

Competency field	Information and Communications Technology - IT Analysis and Design

Co-requisite units

Co-requisite units		

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BSBITS401B Maintain business technology

Modification History

Release	Comments
Release 1	This version first released with *BSB07 Business Training Package version 6.0.* Revised unit. Required skills updated to focus on learning and development practices and compliance with policy and procedures. Replaces BSBITS401A Maintain business technology

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to maintain the effectiveness of business technology in the workplace. It includes maintaining existing technology and planning for future technology requirements.

Application of the Unit

This unit applies to individuals with a broad knowledge of business technology who contribute well developed skills in creating solutions to maintenance and upgrade issues with existing technology. They may have responsibility to provide guidance or to delegate aspects of these tasks to others.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Element	Performance Criteria
Elements describe the essential outcomes of a unit of competency.	*Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.*

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Elements and Performance Criteria

1. Maintain performance of hardware and software	1.1 Monitor and evaluate system effectiveness to ensure it meets ***organisational and system requirements*** 1.2 Use operating system, drive and disk structure, reports and files to identify performance problems 1.3 ***Maintain disk drives and peripherals*** according to manufacturers' and organisational requirements 1.4 Replace ***consumables*** in accordance with manufacturers' and organisational requirements
2. Provide basic system administration	2.1 Carry out system back-up procedure at regular intervals according to organisational and system requirements 2.2 Install and operate ***software*** applications in accordance with developers' and organisational requirements 2.3 Maintain and update security access procedures in line with organisational requirements 2.4 Ensure that licence for use of software is used, checked and recorded in accordance with organisational requirements 2.5 Regularly maintain and update virus programs in accordance with organisational requirements
3. Identify future technology requirements	3.1 Maintain knowledge of current and new ***technology*** by regularly accessing ***sources of information*** 3.2 Identify and develop ***improved technology systems*** using feedback from clients and colleagues 3.3 Assess existing technology against newly available technology to determine future needs and priorities 3.4 Identify and select new technologies to achieve and maintain continuous organisational development 3.5 Obtain management and budget approval for new selected technologies

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to explain the operation and troubleshooting of technology in the work environment
- literacy skills to interpret and evaluate the purposes and objectives of various uses of technology; to display logical organisation of written information
- problem-solving skills to address routine and non-routine faults with hardware and software
- research and analytical skills to analyse and identify organisation's future technology requirements.

Required knowledge

- costs and benefits of technology maintenance strategies
- general features and capabilities of current industry accepted hardware and software products
- principles of environmental sustainable practice in implementing business technology
- importance of back-up and security procedures; maintenance and diagnostic procedures; licensing, installation and purchasing procedures
- key provisions of relevant legislation from all forms of government that may affect aspects of business operations, such as:
  - anti-discrimination legislation
  - ethical principles
  - codes of practice
  - privacy laws
  - environmental issues
  - occupational health and safety (OHS).

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • installing software and hardware • organising and accessing software, materials and consumables • maintaining technology security and maintenance systems • knowledge of costs and benefits of technology maintenance strategies.
Context of and specific resources for assessment	Assessment must ensure: • access to an actual workplace or simulated environment • access to office equipment and resources • access to examples of technology maintenance and security procedures.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • analysis of responses to case studies and scenarios • demonstration of techniques • oral or written questioning to assess knowledge of general features and capabilities of current industry accepted hardware and software products.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other information and communications technology or general administration units.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Organisational and system requirements may include:	• back-up procedures • Code of Conduct • ethical standards • legal and organisational policy/guidelines and requirements • maintenance of customised software • OHS policies, procedures and programs • quality assurance and/or procedures manuals • register of licenses • restore procedures • security and confidentiality procedures • software licence documentation • storage of information technology documentation • storage retrieval and type of product licenses • updating of virus protection systems.
Disk drive and peripherals maintenance may include:	• backing up files before major maintenance • checking hard drive for errors • cleaning dust from internal and external surfaces • creating more free space on the hard disk • defragmenting the hard disk • deleting unwanted files • reviewing programs • using up-to-date anti-virus programs.
Consumables may include:	• disks • magnetic tape and cassettes • print heads • print media • printer ribbons and cartridges.
Software may include:	• accounting applications • commercial software applications • database applications • internet/intranet/extranet related programs • organisation-specific software • presentation applications

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	• spreadsheet applications • word processing applications.

Technology may include:	• client services
	• computers
	• data transfer devices
	• modems
	• peripherals, including:
	  • printers, scanners, tape cartridges
	  • speakers, multimedia kits
	  • personal computer, modems
	  • input equipment such as mouse, touch pad, keyboard, pens
	  • mobile phones, palmtops and personal digital assistants (PDAs), laptops and desktop computers
	  • Bluetooth devices, universal serial bus (USB), Firewire (IEEE 1394)
	• photocopiers
	• printers
	• scanners
	• software.

Sources of information may include:	• computer hardware manufacturers • computer magazines and journals • computer software designers • industry associations • internal/external clients • internet • retail outlets • seminars, workshops and training sessions • trade fairs.
Improved technology systems may include:	• access protocols • cable data transmissions • delivery and installation systems • hardware upgrades • implementing a new system • maintenance options • multimedia • networking options • new hardware • new software • resource usage monitoring • software upgrades

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	• environmentally sustainable design practices.

Unit Sector(s)

Information and Communications Technology – IT Support

Custom Content Section

Not applicable.

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BSBITU201A Produce simple word processed documents

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to correctly operate word processing applications in the production of workplace documents. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals who perform a range of routine tasks in the workplace, using a limited range of practical skills and fundamental knowledge of word processing and software in a defined context, under direct supervision or with limited individual responsibility.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to produce documents	1.1. Use safe work practices to ensure ***ergonomic***, ***work organisation***, energy and resource ***conservation requirements*** are addressed 1.2. Identify ***document*** purpose, audience and presentation requirements, and clarify with relevant personnel as required 1.3. Identify ***organisational*** and task ***requirements*** for document layout and design
2. Produce documents	2.1. ***Format*** document using appropriate ***software functions*** to adjust page layout to meet information requirements, in accordance with organisational style and presentation requirements 2.2. Use system features to identify and manipulate ***screen display options and controls*** 2.3. Use manuals, user documentation and online help to overcome problems with document presentation and production
3. Finalise documents	3.1. Ensure final document is previewed, ***checked***, adjusted and ***printed*** in accordance with organisational and task requirements 3.2. Ensure document is prepared within ***designated time lines*** and organisational requirements 3.3. ***Name and store document*** in accordance with organisational requirements and exit application without information loss/damage

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• communication skills to clarify document requirements • editing and proofreading skills to check own work for accuracy • keyboarding skills to enter text and numerical data • literacy skills to read and understand organisation's procedures, and to use basic models to produce a range of correspondence • problem-solving skills to solve routine problems.
Required knowledge
• formatting styles and their effect on formatting, readability and appearance of documents • purpose, use and function of word processing software • organisational requirements for ergonomics, work periods and breaks, and conservation techniques • organisational style guide.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • knowledge of simple word processing functions, standard document layout and design principles • production of a minimum of three simple, word processed documents.
Context of and specific resources for assessment	Assessment must ensure: • access to an actual workplace or simulated environment • access to office equipment and resources • access to examples of word processed documents and style guides.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • review of formatted document • review of final document • demonstration of techniques • oral or written questioning to assess knowledge of word processing software functions.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • general administration units • other IT use units.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Ergonomic requirements may include:	• avoiding radiation from computer screens • chair height, seat and back adjustment • document holder • footrest • keyboard and mouse position • lighting • noise minimisation • posture • screen position • workstation height and layout
Work organisation requirements may include:	• exercise breaks • mix of repetitive and other activities • rest periods
Conservation requirements may include:	• disposing of non-confidential waste paper in recycling bins • double-sided paper use • re-using paper for rough drafts (observing confidentiality requirements) • utilising power-save options for equipment
Documents may include:	• agendas • briefing papers • envelopes • faxes • labels • letters • mail merges • memos • minutes • short reports • simple one-page flyers • standard form letters
Organisational requirements may	• company colour scheme

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RANGE STATEMENT	
include:	• company logo • consistent corporate image • content restrictions • established guidelines and procedures for document production • house styles • observing copyright legislation • organisation name, time, date, document title, filename etc. in header/footer • templates
Formatting may include:	• alignment on page • columns • company logo/letterhead • enhancements to format - borders, patterns and colours • enhancements to text - colour, size, orientation • headers/footers • margins • page orientation
Software functions may include:	• default settings • document protection • grammar check • headers/footers • indent • line spacing • page numbers • page set up • paragraph formatting • spell check • tabs • text formatting
Screen display options and controls may include:	• layout view • maximise/minimise • normal view • page view • print preview • ruler • toolbars • zoom percentage

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RANGE STATEMENT	
Checking may include:	• accuracy of information • consistency of layout • ensuring instructions with regard to content and format have been followed • grammar • proofreading • spelling, electronically and manually
Printing may include:	• basic print settings • multiple copies • odd or even pages • print preview • printer setup • specified pages • whole document
Designated time lines may include:	• organisational time line e.g. deadline requirements • time line agreed with internal/external client • time line agreed with supervisor/person requiring document/s
Naming and storing documents may include:	• appropriate file type • authorised access • file names according to organisational procedure e.g. numbers rather than names • file names which are easily identifiable in relation to the content • file/directory names which identify the operator, author, section, date etc. • filing locations • organisational policy for backing up files • organisational policy for filing hard copies of documents • security • storage in folders/sub-folders • storage on hard/floppy disk drives, CD-ROM, tape back-up

Unit Sector(s)

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Unit sector	

Competency field

Competency field	Information and Communications Technology - IT Use

Co-requisite units

Co-requisite units		

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BSBITU202A Create and use spreadsheets

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to correctly create and use spreadsheets and charts through the use of spreadsheet software. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals who perform a range of routine tasks in the workplace using a limited range of practical skills and fundamental knowledge of creating spreadsheets in a defined context under direct supervision or with limited individual responsibility.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Select and prepare resources	1.1. Adjust workspace, furniture and equipment to suit user ***ergonomic***, ***work organisation*** and occupational health and safety (OHS) ***requirements*** 1.2. Use energy and resource ***conservation techniques*** to minimise wastage in accordance with organisational and statutory requirements 1.3. Identify ***spreadsheet task requirements*** and clarify with relevant personnel as required
2. Create simple spreadsheets	2.1. Ensure ***data*** is entered, ***checked*** and amended in accordance with organisational and task requirements, to maintain consistency of design and layout 2.2. ***Format*** spreadsheet using ***software functions***, to adjust page and cell layout to meet information requirements, in accordance with organisational style and presentation requirements 2.3. Ensure ***formulae*** are used and tested to confirm output meets task requirements, in consultation with appropriate personnel as required 2.4. Use manuals, user documentation and online help to overcome problems with spreadsheet design and production
3. Produce simple charts	3.1. Select ***chart type*** and design that enables valid representation of numerical data and meets organisational and task requirements 3.2. Create chart using appropriate data range in the spreadsheet 3.3. Modify chart type and layout using formatting ***features***
4. Finalise spreadsheets	4.1. Ensure spreadsheet and any accompanying charts are previewed, adjusted and ***printed*** in accordance with organisational and task requirements 4.2. Ensure data input meets ***designated time lines*** and organisational requirements for speed and accuracy 4.3. Name and ***store*** spreadsheet in accordance with organisational requirements and exit the application without data loss/damage

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• communication skills to clarify requirements of spreadsheet • editing and proofreading skills to check own work for accuracy • keyboarding skills to enter text and numerical data • literacy skills to read and understand organisation's procedures, and to use basic models to produce a range of spreadsheets • numeracy skills to create and use spreadsheet formulae.
Required knowledge
• formatting of workplace documents • organisational requirements for ergonomic standards, work periods and breaks, and conservation techniques • organisational guidelines on spreadsheet manipulation and processing • purpose and range of use of spreadsheet functions.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • designing a minimum of two spreadsheets • using cell-based formulae • creating charts using relevant data • knowledge of purpose and range of use of spreadsheet functions.
Context of and specific resources for assessment	Assessment must ensure: • access to an actual workplace or simulated environment • access to office equipment and resources • access to examples of spreadsheets and simple formulae.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • review of final spreadsheets • analysis of responses to case studies and scenarios • demonstration of techniques • oral or written questioning to assess knowledge of spreadsheet software functions.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • general administration units • other IT use units.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Ergonomic requirements may include:	• avoiding radiation from computer screens • chair height, seat and back adjustment • document holder • footrest • keyboard and mouse position • lighting • noise minimisation • posture • screen position • workstation height and layout
Work organisation requirements may include:	• exercise breaks • mix of repetitive and other activities • rest periods
Conservation techniques may include:	• double-sided paper use • recycling used and shredded paper • re-using paper for rough drafts (observing confidentiality requirements) • utilising power-save options for equipment
Spreadsheet task requirements may include:	• data entry • output • presentation • storage
Data may include:	• numbers • text
Checking may include:	• accuracy of data • accuracy of formulae with calculator • ensuring instructions with regard to content and format have been followed • proofreading • spelling, electronically and manually
Formatting may include:	• alignment on page • efficiency of formulae

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RANGE STATEMENT	
	• enhancements to format - borders, patterns and colours • enhancements to text • headers/footers • use of absolute and relative cell addresses • use of cell addresses in formulae
Software functions may include:	• adding/deleting columns/rows • formatting cells • formatting text • headers/footers • sizing columns/rows
Formulae may include:	• absolute cell referencing and/or mixed references • average • division • maximum • minimum • multiplication • subtraction • sum • combinations of above
Chart types may include:	• area • bar • column • exploded pie • line • pie and 3-D pie • scatter/bubble • stacked/multiple bar • stacked, 3-D column
Features may include:	• axes • axis title • borders • chart title • colours • data labels • data tables • fills • gridlines • legend

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RANGE STATEMENT	
	• lines • patterns
Printing may include:	• fit on one page • fit specific number of pages • with formulae • with values
Designated time lines may include:	• organisational time line e.g. financial requirements • time line agreed with internal/external client • time line agreed with supervisor/person requiring spreadsheet
Storing data may include:	• authorised access • filing locations • organisational policy for backing up files • organisational policy for filing hard copies of spreadsheets • security • storage in electronic folders/sub-folders • storage on CD-ROM, zip drives, USB memory

Unit Sector(s)

Unit sector	

Competency field

Competency field	Information and Communications Technology - IT Use

Co-requisite units

Co-requisite units		

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BSBITU301A Create and use databases

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to create simple two table relational databases with reports and queries, for the storage and retrieval of information. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals employed in a range of work environments who develop and use simple databases to store and retrieve data. They may provide administrative support within an enterprise, or may be independently responsible for the storage and retrieval of data relating to their own work roles.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Create a simple database	1.1. Design a simple database, with at least two tables, using a ***database application***, ***basic design principles***, ***software functions*** and ***simple formulae*** 1.2. Develop a table with fields and attributes according to database usage, as well as ***data*** considerations and user requirements 1.3. Create a primary key for each table 1.4. Modify table layout and field attributes as required 1.5. Create a relationship between the two tables 1.6. ***Check and amend data*** entered, in accordance with organisational and task requirements
2. Create reports and queries	2.1. Determine information output, database tables to be used and ***report layout*** to meet task requirements 2.2. Determine data groupings, search and sort criteria to meet task requirements 2.3. Run reports and queries to check that results and formulae provide the required data 2.4. Modify reports to include or exclude additional requirements
3. Use database	3.1. Ensure data input meets ***designated time lines*** and organisational requirements for speed and accuracy 3.2. Use manuals, user documentation and online help to overcome problems with database design and production 3.3. Preview, adjust and ***print*** database reports or forms in accordance with organisational and task requirements 3.4. Name and ***store databases***, in accordance with organisational requirements, and exit application without data loss or damage 3.5. Prepare and distribute reports to appropriate person in a suitable format

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• numeracy skills to create simple queries and to use simple formulae • planning and organising skills to develop effective databases • problem-solving skills to address inconsistencies in data and issues in database, and to query structures.
Required knowledge

• key provisions of relevant legislation from all forms of government, standards and codes that may affect aspects of business operations, such as:
  • anti-discrimination legislation
  • ethical principles
  • codes of practice
  • privacy laws
  • occupational health and safety
• organisational requirements relating to data entry, storage and presentation.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • creating simple databases and queries • manipulating data using queries • formatting data into a final version.
Context of and specific resources for assessment	Assessment must ensure: • access to an actual workplace or simulated environment • access to office equipment and resources • access to sample data.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • review of authenticated documents from the workplace or training environment • demonstration of techniques.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • administration units • other information and communications technology units.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Database applications may include:	• commercial database applications • organisational specific database applications
Basic design principles may include:	• naming conventions • data layout • formatting • database use • required output • reporting and presentation requirements
Software functions may include:	• adding, deleting, moving, re-labelling fields • altering field widths • calculating, using formula • data protection • field definitions and attributes • formatting fields • formatting text • headers and footers • inserting and deleting blank lines and spaces • repeating (if available) • table, form and report wizards
Simple formulae may include:	• average • count • division • maximum • minimum • multiplication • subtraction • sum • combinations of above
Data may include:	• numbers • text
Checking and amending data	• accuracy of data

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RANGE STATEMENT	
may include:	• accuracy of formulae with calculator • ensuring instructions with regard to content and format have been followed • outcome of sorting or filtering • proofreading • spelling, electronically and manually
Report layout may include:	• alignment on page • columns • enhancements to format - borders, patterns and colours • enhancements to text • formatting provided through use of a wizard or other automated process • headers/footers • logical ordering of data • tables
Designated time lines may include:	• time line agreed with internal or external client • time line agreed with supervisor or person requiring database
Printing may include:	• forms • queries • records • reports • tables
Storing databases may include:	• authorised access • filing locations • naming conventions • organisational policy for backing up files • organisational policy for filing hard copies of databases • security • storage in electronic folders and sub-folders • storage on disk drives, CD-ROM, back-up tapes

Unit Sector(s)

Unit sector	

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Competency field

Competency field	Information and communications Technology - IT use

Co-requisite units

Co-requisite units		

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BSBITU402A Develop and use complex spreadsheets

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to use spreadsheet software to complete business tasks and to produce complex documents. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals employed in a range of work environments who require skills in the creation of complex spreadsheets to store and retrieve data. They may work as individuals providing administrative support within an enterprise, or may be independently responsible for designing and working with spreadsheets relevant to their own work roles.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to develop spreadsheet	1.1. Organise personal work environment in accordance with ***ergonomic requirements*** 1.2. Analyse task and determine specifications for spreadsheets 1.3. Identify organisational and task requirements in relation to data entry, storage, output, reporting and presentation requirements 1.4. Apply ***work organisation strategies*** and ***energy and resource conservation techniques*** to plan work activities
2. Develop a linked spreadsheet solution	2.1. Utilise ***spreadsheet design*** software ***functions*** and ***formulae*** to meet identified requirements 2.2. Link spreadsheets in accordance with software procedures 2.3. Format cells and use data attributes assigned with relative and/or absolute cell references, in accordance with the task specifications 2.4. Test formulae to confirm output meets task requirements
3. Automate and standardise spreadsheet operation	3.1. Evaluate tasks to identify those where automation would increase efficiency 3.2. Create, use and edit ***macros*** to fulfil the requirements of the task and automate spreadsheet operation 3.3. Develop, edit and use ***templates*** to ensure consistency of design and layout for forms and reports, in accordance with organisational requirements
4. Use spreadsheets	4.1. Enter, check and amend data in accordance with organisational and task requirements 4.2. ***Import and export*** data between compatible spreadsheets and adjust host documents, in accordance with software and system procedures 4.3. Use manuals, user documentation and online help to overcome problems with spreadsheet design and production 4.4. Preview, adjust and ***print*** spreadsheet in accordance with organisational and task requirements 4.5. ***Name and store spreadsheet*** in accordance with organisational requirements and exit the application

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ELEMENT	PERFORMANCE CRITERIA
	without data loss or damage
5. Represent numerical data in graphic form	5.1. Determine style of ***graph*** to meet specified requirements and manipulate spreadsheet data if necessary to suit graph requirements 5.2. ***Create graphs*** with labels and titles from numerical data contained in a spreadsheet file 5.3. Save, view and print graph within designated time lines

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• literacy skills to interpret and evaluate the purposes and uses of various features of spreadsheets and to use a variety of strategies for planning and reviewing own work • proofreading and editing skills to check for accuracy and consistency of information by consulting additional resources • numeracy skills to collate and present data, graphs and related references.
Required knowledge

• advanced functions of spreadsheet software applications
• impact of formatting and design on the presentation and readability of data
• key provisions of relevant legislation from all forms of government, standards and codes that may affect aspects of business operations, such as:
  • anti-discrimination legislation
  • ethical principles
  • codes of practice
  • privacy laws
  • occupational health and safety
• organisational policies and procedures.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • developing complex spreadsheets • developing graphical representations of data contained in spreadsheets.
Context of and specific resources for assessment	Assessment must ensure: • access to office equipment and software • access to samples of data for inclusion in spreadsheets.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • review of authenticated documents from the workplace or training environment • demonstration of techniques.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • administration units • other information and communications technology units.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Ergonomic requirements may include:	• avoiding radiation from computer screens • chair height, seat and back adjustment • document holder • footrest • keyboard and mouse position • lighting • noise minimisation • posture • screen position • workstation height and layout
Work organisation strategies may include:	• exercise breaks • mix of repetitive and other activities • rest periods
Energy and resource conservation techniques may include:	• double-sided paper use • recycling used and shredded paper • re-using paper for rough drafts (observing confidentiality requirements) • using power-save options for equipment
Spreadsheet design may include:	• analysis • appropriateness • avoidance of blank rows and columns • embedding cell references in formulae • formulae • formatting and reformatting • functions • headers and footers • headings • headings and labels • identification and parameters • import and export of data • labels • linked formulae

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RANGE STATEMENT	
	• multi-page documents • pivot tables • relative and absolute cell references • split screen operation
Functions may include:	• basic financial functions (if available) • date functions • logical functions (lookup, if, choose, true, false, conditions) • mathematical functions (square root, integer, absolute value, round) • simple nested functions • statistical functions (standard deviation, count, maximum, minimum)
Formulae may include:	• addition • average • comparison • division • exponentiation • multiplication • percentage • subtraction • combinations of above
Macros may include:	• printing sections of a spreadsheet
Templates may include:	• font types and sizes • forms • headers and footers • headings • page formats • reports
Importing and exporting data may include:	• proofreading • reformatting • split screen (if available)
Printing may include:	• charts • entire workbooks • selected data within a worksheet • worksheets
Naming and storing spreadsheets may include:	• authorised access • file naming conventions • filing locations

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RANGE STATEMENT	
	• organisational policy for backing up files • organisational policy for filing hard copies of spreadsheets • security • storage in folders and sub-folders • storage on disk drives, CD-ROM, USB, tape back-up, server
Graphs may include:	• bar • line • pie • scatter • stack • 3D
Creating graphs may include:	• data range • keys and legends • labels and titles • naming • sizing (if possible) • using graph menu • X and Y axis

Unit Sector(s)

Unit sector	

Competency field

Competency field	Information and Communications Technology - IT Use

Co-requisite units

Co-requisite units		

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Co-requisite units		

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BSBITU404A Produce complex desktop published documents

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to design and produce complex desktop published documents. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals employed in a range of work environments who require well developed skills in desktop publishing. They may be individuals providing administrative support within an enterprise, or others responsible for the production of their own documents.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to produce desktop published documents	1.1. Use safe work practices including addressing ***ergonomic requirements*** and using ***work organisation strategies*** 1.2. Use ***energy and resource conservation techniques*** 1.3. Identify ***document purpose***, audience, presentation and ***final output*** requirements, and clarify with relevant personnel as required 1.4. Identify ***organisational and task requirements*** for desktop published documents to ensure consistency of style and image
2. Design desktop published documents	2.1. ***Design*** document to enhance readability and appearance, according to organisational and task requirements 2.2. Determine document type and assess production and design requirements 2.3. Set up and use master pages, templates and styles to ensure ***consistency of design and layout*** 2.4. Set up colour palettes according to organisational and task requirements
3. Create desktop published documents	3.1. Prepare, format and enter required text 3.2. Import text from other applications and resolve any formatting issues 3.3. Scan or import graphics from other applications and resolve any formatting issues 3.4. Use ***complex software functions*** to arrange text and graphics on page, according to organisational and task requirements
4. Finalise desktop published documents	4.1. Ensure pages. and combined graphics and text are composed correctly, to suit organisational and task requirements 4.2. Check that numerical sequencing and laydown of document is correct, to meet binding and finishing requirements 4.3. Incorporate bleed allowance in margins and borders
5. Produce desktop published documents	5.1. Review text for possible errors and omissions, and resolve any issues 5.2. Produce completed document in line with required final output 5.3. ***Name and store text documents***, in accordance with organisational requirements and exit the application

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ELEMENT	PERFORMANCE CRITERIA
	without information loss/damage 5.4. Prepare text documents within ***designated time lines*** and organisational requirements for speed and accuracy 5.5. Use manuals, user documentation and online help to overcome problems with document design and production

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• communication skills to clarify requirements of documents • culturally appropriate communication skills to relate to people from diverse backgrounds and people with diverse abilities • editing and proofreading skills to check own work for accuracy against original • keyboarding skills to enter text and numerical data • literacy skills to read and understand organisation's procedures and to use models or exemplars to produce a range of documents • problem-solving skills to edit documents and to resolve issues of consistency of design.
Required knowledge
• formatting styles and their effect on formatting, readability and appearance of documents • organisational requirements for ergonomics, work periods and breaks, and energy and resource conservation techniques • purposes, uses and functions of desktop publishing software • organisational style guide.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • applying document design and layout principles • producing complex desktop published documents.
Context of and specific resources for assessment	Assessment must ensure: • access to office equipment and resources • access to samples of desktop published documents.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • review of authenticated documents from the workplace or training environment • demonstration of techniques in a workplace or simulated environment • oral or written questioning to assess knowledge of desktop publishing software functions.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other information and communications technologyunits.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Ergonomic requirements may include:	• avoiding radiation from computer screens • chair height, seat and back adjustment • document holder • footrest • keyboard and mouse position • lighting • noise minimisation • posture • screen position • workstation height and layout
Work organisation strategies may include:	• exercise breaks • mix of repetitive and other activities • rest periods
Energy and resource conservation techniques may include:	• double-sided paper use • recycling used and shredded paper • re-using paper for rough drafts (observing confidentiality requirements) • utilising power-save options for equipment
Document purpose may include using:	• call outs • captions • concordance files • different odd and even pages • document protection • drawing • forms with fields • hyperlinks • long documents • linked or embedded objects • mail merge data documents • master documents • MS WordArt • multiple headers and footers

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RANGE STATEMENT	
	• multiple sections • multiple users • primary mail merge documents • subdocuments • templates
Final output may include:	• electronic publishing • printed document • professionally printed document • web services
Organisational and task requirements may include:	• company colour scheme • company logo • consistent corporate image • content restrictions • established guidelines and procedures for document production • house styles • master pages • observing copyright legislation • organisation name, time, date, document title, filename or other fields in headers or footers • sheet size • style sheets • templates
Design may include:	• balance • boxes • colour • columns • diversity • drawing • graphics • headings • letter and memo conventions • page layout • photographs • relative positioning of graphics and headings • simplicity • text flow • typeface • typography • white space

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RANGE STATEMENT	
Consistency of design may include:	• annotated references • borders • bullet/ number lists • captions • consistency with other business documents • footnotes and endnotes • indentations • kerning and leading • page numbers • spacings • typeface styles and point size
Complex software functions may include:	• data transfer • display features • embedding • exporting • fields • form fields • formulae • importing • index • linking • macros • merge criteria • sort criteria • table of contents • templates
Naming and storing text documents may include:	• authorised access • file or folder names which identify the operator, author, section, date • filing locations • file names according to organisational procedure • file names which are easily identifiable in relation to the content • organisational policy for backing up files storage in folders and sub-folders • organisational policy for filing hard copies of documents • security and password protection • storage on disk drives, CD-ROM, USBs, tape or server back-up

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RANGE STATEMENT	
Designated time lines may include:	• time line agreed with interna or external client • time line agreed with supervisor or person requiring document • organisational time line e.g. deadline requirements

Unit Sector(s)

Unit sector	

Competency field

Competency field	Information and Communications Technology - IT Use

Co-requisite units

Co-requisite units		

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BSBLED401A Develop teams and individuals

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to determine individual and team development needs and to facilitate the development of the workgroup. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals with a broad knowledge of learning and development who apply their skills in addressing development needs to meet team objectives. They may have responsibility to provide guidance or to delegate aspects of tasks to others.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine development needs	1.1. Systematically identify and implement ***learning and development needs*** in line with ***organisational requirements*** 1.2. Ensure that a learning plan to meet individual and group training and development needs is collaboratively developed, agreed to and implemented 1.3. Encourage individuals to self-evaluate performance and identify areas for improvement 1.4. Collect ***feedback on performance*** of team members from relevant sources and compare with established team learning needs
2. Develop individuals and teams	2.1. Identify learning and development program goals and objectives, ensuring a match to the specific knowledge and skill requirements of competency standards relevant to the industry 2.2. Ensure that ***learning delivery methods*** are appropriate to the learning goals, the learning style of participants, and availability of ***equipment and resources*** 2.3. Provide workplace learning opportunities, and ***coaching and mentoring assistance*** to facilitate individual and team achievement of competencies 2.4. Create development opportunities that incorporates a range of activities and support materials appropriate to the achievement of identified competencies 2.5. Identify and approve resources and time lines required for learning activities in accordance with organisational requirements
3. Monitor and evaluate workplace learning	3.1. Use feedback from individuals or teams to identify and implement improvements in future learning arrangements 3.2. Assess and record outcomes and performance of individuals/teams to determine the effectiveness of development programs and the extent of additional development support 3.3. Negotiate modifications to learning plans to improve the efficiency and effectiveness of learning 3.4. Document and maintain records and reports of competency according to organisational requirements

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to receive and report on feedback, to maintain effective relationships and to manage conflict
- culturally appropriate communication skills to relate to people from diverse backgrounds and people with diverse abilities
- leadership skills to gain trust and confidence of clients and colleagues
- literacy skills to read, write and understand a variety of texts; and to edit and proofread documents to ensure clarity of meaning, accuracy and consistency of information
- negotiation skills to achieve mutually acceptable outcomes
- technology skills to support effective communication and presentation.

Required knowledge

- key provisions of relevant legislation from all levels of government that may affect aspects of business operations, such as:
  - anti-discrimination legislation
  - ethical principles
  - codes of practice
  - privacy laws
  - occupational health and safety (OHS)
- facilitation techniques to encourage team development and improvement
- organisational policies, plans and procedures
- career paths and competency standards relevant to the industry.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • identifying and implementing learning opportunities for others • giving and receiving feedback from team members to encourage participation in and effectiveness of team • creating learning plans to match skill needs • knowledge of relevant legislation.
Context of and specific resources for assessment	Assessment must ensure: • access to an actual workplace or simulated environment • access to office equipment and resources • examples of learning and development plans, policies and procedures • examples of documents relating to diversity policies and procedures.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • analysis of responses to case studies and scenarios • oral or written questioning to assess knowledge of career paths and competency standards relevant to the industry • review of records and reports of competency.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • management units • other learning and development units.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Learning and development needs may include:	• career planning/development • coaching, mentoring and/or supervision • formal/informal learning programs • internal/external training provision • performance appraisals • personal study • recognition of current competence/skills recognition • work experience/exchange/opportunities • workplace skills assessment
Organisational requirements may include:	• access and equity principles and practices • anti-discrimination and related policy • business and performance plans • confidentiality and security requirements • defined resource parameters • ethical standards • goals, objectives, plans, systems and processes • legal and organisational policies, guidelines and requirements • OHS policies, procedures and programs • quality and continuous improvement processes and standards • quality assurance and/or procedures manuals
Feedback on performance may include:	• formal/informal performance appraisals • obtaining feedback from clients • obtaining feedback from supervisors and colleagues • personal, reflective behaviour strategies • routine organisational methods for monitoring service delivery
Learning delivery methods may include:	• conference and seminar attendance • formal course participation • induction

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RANGE STATEMENT	
	• involvement in professional networks • on-the-job coaching or mentoring • presentations/demonstrations • problem-solving • work experience
Equipment and resources may include:	• facilities • funding • guest speakers • technological tools and equipment • time • training equipment such as whiteboards and audio-visual equipment
Coaching and mentoring assistance may include:	• fair and ethical practice • non-discriminatory processes and activities • presenting and promoting a positive image of the collective group • problem-solving • providing encouragement • providing feedback to another team member • respecting the contribution of all participants and giving credit for achievements

Unit Sector(s)

Unit sector	

Competency field

Competency field	Workforce Development - Learning and Development

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Co-requisite units

Co-requisite units		

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BSBLED502A Manage programs that promote personal effectiveness

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to manage programs within a health and wellbeing focus. The unit addresses the management of the range of programs that would typically be associated with health and wellbeing such as stress management, smoking cessation, exercise, Employee Assistance Programs (EAPs). No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to human resources managers, human resources personnel or other managers who take responsibility for managing staff health and wellbeing program/s or activities. It has particular relevance for managers of human resources or diversity programs, frontline managers and specialist consultants responsible for promoting a balance between work demands and personal life. It is not assumed that the manager will be directly involved in delivering the program/s.

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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Research and analyse employee health issues	1.1. Identify and collect information on ***employee health issues*** from appropriate internal and external sources 1.2. Review findings and their implications for the organisation and ***business objectives*** 1.3. Develop ***options*** for addressing identified health issues 1.4. Obtain support from senior managers for preferred option/s
2. Plan health and wellbeing program/s	2.1. Develop program/s scope and objectives in consultation with appropriate industry consultants, colleagues and managers 2.2. Plan and create administrative structure and resources for the program/s 2.3. Establish program responsibilities and clearly communicate to all ***stakeholders*** 2.4. Plan communications and marketing strategies in conjunction with stakeholders 2.5. Establish suitable evaluation methods, develop an overall ***program management plan*** and communicate this plan to stakeholders
3. Implement, administer and monitor program/s	3.1. Prepare policy documents, and implement and monitor strategies in conjunction with program team members 3.2. Provide appropriate support, assistance and mentors to relevant personnel 3.3. Implement and monitor tracking systems according to program guidelines 3.4. Reach program milestones within agreed time lines and provide regular progress reports to stakeholders
4. Evaluate program/s	4.1. Use agreed ***evaluation methods*** to assess the effectiveness of the program at specific stages 4.2. Communicate information from program evaluation process to stakeholders 4.3. Incorporate evaluation process and outcomes into continuous improvement strategies, enterprise agreements and future corporate plans

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• planning and organising skills to schedule and monitor activities • research and analysis skills to explore employee health issues and to review data to determine whether employee health initiatives are meeting their objective.
Required knowledge
• range of employee health issues and options for improving health outcomes • employee health program design and evaluation techniques.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • research on employee health issues and a plan to improve employee health in one or more areas • techniques for monitoring an employee health program and evaluating its effectiveness • knowledge of a range of employee health issues and options for improving health outcomes.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • assessment of written reports on employee health issues and options to address health issues of concern • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • observation of presentations on employee health programs • review of documentation aligning strategies with corporate goals, mission statements and directions • review of program management plan and how it was communicated to stakeholders • evaluation of progress reports to stakeholders • oral or written questioning to assess knowledge of employee health program design and evaluation techniques.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Diploma of Human Resources Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Employee health issues may include:	• alcohol or other drug use • diet and obesity • lifestyle related diseases, such as diabetes • mental health, including depression and anxiety • obesity • physical fitness • smoking • stress
Business objectives may include:	• becoming an employer of choice • improving productivity • reducing illness and absenteeism • triple bottom line
Options may include:	• changing canteen offerings • conducting information or awareness-raising programs • developing policies on health food, stress management or other health issues • EAPs • offering more flexibility in working hours or leave arrangements • offering training or skills development programs • subsidising exercise programs, gym membership or smoking cessation
Stakeholders may include:	• colleagues, team members or other staff members • owners/management/financial backers
Program management plan will normally include:	• additional resource requirements (including technology) • cost benefit analysis and contingency plans • key program milestones • strategies to assess, review and communicate progress against program goals

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RANGE STATEMENT	
	• strategies to obtain management approval for program plan
Evaluation methods may include:	• collection of qualitative data • collection of quantitative data • cost benefit analysis • feedback from consultants or staff delivering program/s • interviews • mapping against agreed goals and priorities

Unit Sector(s)

Unit sector	

Competency field

Competency field	Workforce Development - Learning and Development

Co-requisite units

Co-requisite units		

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BSBMGT403A Implement continuous improvement

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to implement the organisation's continuous improvement systems and processes. Particular emphasis is on using systems and strategies to actively encourage the team to participate in the process, monitoring and reviewing performance, and identifying opportunities for further improvements. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	Frontline managers have an active role in implementing the continuous improvement process to achieve the organisation's objectives. Their position, closely associated with the creation and delivery of products and services, means that they have an important role in influencing the ongoing development of the organisation. At this level, work will normally be carried out within routine and non routine methods and procedures, which require planning and evaluation, and leadership and guidance of others.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Implement continuous improvement systems and processes	1.1. Implement ***systems*** to ensure that individuals and teams are actively encouraged and supported to ***participate in decision making processes***, assume responsibility and exercise initiative 1.2. Communicate the organisation's ***continuous improvement processes*** to individuals and teams, and obtain feedback 1.3. Ensure effective ***mentoring and coaching*** allows individuals and teams to implement the organisation's continuous improvement processes
2. Monitor and review performance	2.1. Use the organisation's systems and ***technology*** to monitor and review progress and to identify ways in which planning and operations could be improved 2.2. Improve ***customer service*** through continuous improvement techniques and processes 2.3. Formulate and communicate recommendations for adjustments to those who have a role in their development and implementation
3. Provide opportunities for further improvement	3.1. Implement ***processes to ensure that team members are informed of savings and productivity/service improvements*** in achieving the business plan 3.2. Document work performance to aid the identification of further opportunities for improvement 3.3. Manage records, reports and recommendations for improvement within the organisation's systems and processes

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills

• communication skills to:
  • coach and mentor team members
  • gain the commitment of individuals and teams to continuously improve
• innovation skills to design better ways of performing work.

Required knowledge

• principles and techniques associated with:
  • benchmarking
  • best practice
  • change management
  • continuous improvement systems and processes
  • quality systems.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • taking active steps to implement, monitor and adjust plans, processes and procedures to improve performance • supporting others to implement the continuous improvement system/processes, and to identify and report opportunities for further improvement • knowledge of principles and techniques associated with continuous improvement systems and processes.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • assessment of written reports • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • observation of presentations • oral or written questioning to assess knowledge of principles and techniques associated with change management • review of how the organisation's continuous improvement processeswascommunicated to individuals and teams • review of documentation of work performance.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Certificate IV in Frontline Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Systems may refer to:	• forums, meetings • newsletters and reports • organisational policies and procedures • web-based communication devices
Participation in decision making processes may include:	• feedback in relation to outcomes of the consultative process • processes which ensures all employees have the opportunity to contribute to organisational issues
Continuous improvement processes may include:	• cyclical audits and reviews of workplace, team and individual performance • evaluations and monitoring of effectiveness • implementation of quality systems, such as International Standardization for Organization (ISO) • modifications and improvements to systems, processes, services and products • policies and procedures which allow the organisation to systematically review and improve the quality of its products, services and procedures • seeking and considering feedback from a range of stakeholders
Mentoring and coaching may refer to:	• providing assistance with problem-solving • providing feedback, support and encouragement • teaching another member of the team, usually focusing on a specific work task or skill
Technology may include:	• computerised systems and software such as databases, project management and word processing • telecommunications devices • any other technology used to carry out work roles and responsibilities

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RANGE STATEMENT	
Customer service may be:	• internal or external • to existing, new or potential clients
Processes to ensure that team members are informed of savings and productivity/service improvements may refer to:	• email/intranet, newsletters or other communication devices • newsletters and bulletins • staff reward mechanisms • team meetings

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Management

Co-requisite units

Co-requisite units		

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BSBMGT502B Manage people performance

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to manage the performance of staff who report to them directly. Development of key result areas and key performance indicators and standards, coupled with regular and timely coaching and feedback, provide the basis for performance management. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to all managers and team leaders who manage people. It covers work allocation and the methods to review performance, reward excellence and provide feedback where there is a need for improvement. The unit makes the link between performance management and performance development, and reinforces both functions as a key requirement for effective managers. This is a unit that all managers/prospective managers who have responsibility for other employees should strongly consider undertaking.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Allocate work	1.1. Consult relevant groups and individuals on work to be allocated and resources available 1.2. Develop work plans in accordance with operational plans 1.3. Allocate work in a way that is efficient, cost effective and outcome focussed 1.4. Confirm ***performance standards***, ***Code of Conduct*** and work outputs with relevant teams and individuals 1.5. Develop and agree ***performance indicators*** with relevant staff prior to commencement of work 1.6. Conduct ***risk analysis*** in accordance with the organisational risk management plan and legal requirements
2. Assess performance	2.1. Design ***performance management*** and review processes to ensure consistency with organisational objectives and policies 2.2. Train participants in the performance management and review process 2.3. Conduct performance management in accordance with organisational protocols and time lines 2.4. Monitor and evaluate performance on a continuous basis
3. Provide feedback	3.1. Provide informal feedback to staff on a regular basis 3.2. Advise relevant people where there is poor performance and take necessary actions 3.3. Provide on-the-job coaching when necessary to improve performance and to confirm ***excellence in performance*** 3.4. Document performance in accordance with the organisational performance management system 3.5. Conduct formal structured feedback sessions as necessary and in accordance with organisational policy
4. Manage follow up	4.1. Write and agree performance improvement and development plans in accordance with organisational policies 4.2. Seek assistance from human resources specialists where appropriate 4.3. Reinforce excellence in performance through recognition and continuous feedback

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ELEMENT	PERFORMANCE CRITERIA
	4.4. Monitor and coach individuals with poor performance 4.5. Provide support services where necessary 4.6. Counsel individuals who continue to perform below expectations and implement the disciplinary process if necessary 4.7. ***Terminate*** staff in accordance with legal and organisational requirements where serious misconduct occurs or ongoing poor-performance continues

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• communication skills to articulate expected standards of performance, to provide effective feedback and to coach staff who need development • risk management skills to analyse, identify and develop mitigation strategies for identified risks • planning and organisation skills to ensure a planned and objective approach to the performance management system.
Required knowledge
• relevant legislation from all levels of government that affects business operation, especially in regard to occupational health and safety and environmental issues, equal opportunity, industrial relations and anti-discrimination • relevant awards and certified agreements • performance measurement systems utilised within the organisation • unlawful dismissal rules and due process • staff development options and information.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • documented performance indicators and a critical description and analysis of performance management system from the workplace • techniques in providing feedback and coaching for improvement in performance • knowledge of relevant awards and certified agreements.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • analysis of responses to case studies and scenarios • assessment of written reports • demonstration of techniques in providing feedback and coaching • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • review of work plans, performance indicators, risk analysis,performance management and review processes, performance improvement and development plans.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other management units.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Performance standards mean:	• level of performance sought from an individual or group which may be expressed either quantitatively or qualitatively
Code of Conduct means:	• agreed (or decreed) set of rules relating to employee behaviour/conduct with other employees or an agreed (or decreed) set of rules relating to employee behaviour/conduct with other employees or customers
Performance indicators mean:	• measures against which performance outcomes are gauged
Risk analysis means:	• determination of the likelihood of a negative event preventing the organisation meeting its objectives and the likely consequences of such an event on organisational performance
Performance management means:	• in accordance with relevant industrial agreements • process or set of processes for establishing a shared understanding of what an individual or group is to achieve, and managing and developing individuals in a way which increases the probability it will be achieved in both the short- and long-term
Excellence in performance means:	• regularly and consistently exceeding the performance targets established while meeting the organisation's performance standards
Termination means:	• cessation of the contract of employment between an employer and an employee, at the initiative of the employer within relevant industrial agreements

Unit Sector(s)

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Unit sector	

Competency field

Competency field	Management and Leadership - Management

Co-requisite units

Co-requisite units		

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BSBMGT515A Manage operational plan

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to develop and monitor implementation of the operational plan to provide efficient and effective workplace practices within the organisation's productivity and profitability plans. Management at a strategic level requires systems and procedures to be developed and implemented to facilitate the organisation's operational plan. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to people who manage the work of others and operate within the parameters of a broader strategic and/or business plan. The task of the manager at this level is to develop and implement an operational plan to ensure that the objectives and strategies outlined in the strategic and/or business plan are met by work teams. However in some larger organisations operational plans may be developed by a strategic planning unit. At this level work will normally be carried out within complex and diverse methods and procedures, which require the exercise of considerable discretion and judgement, using a range of problem solving and decision making strategies.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop operational plan	1.1. Research, analyse and document ***resource requirements*** and develop an operational plan in consultation with ***relevant personnel***, ***colleagues and specialist resource managers*** 1.2. Develop and/or implement ***consultation processes*** as an integral part of the operational planning process 1.3. Ensure details of the operational plan include the development of ***key performance indicators*** to measure organisational performance 1.4. Develop and implement ***contingency plans*** at appropriate stages of operational planning 1.5. Ensure the development and presentation of proposals for resource requirements is supported by a variety of information sources and seek specialist advice as required 1.6. Obtain approval for plan from relevant parties and ensure understanding among work teams involved
2. Plan and manage resource acquisition	2.1. Develop and implement strategies to ensure that employees are recruited and/or inducted within the organisation's human resources management policies and practices 2.2. Develop and implement strategies to ensure that physical resources and services are acquired in accordance with the ***organisation's policies***, ***practices and procedures***
3. Monitor and review operational performance	3.1. Develop, monitor and review performance systems and processes to assess progress in achieving profit and productivity plans and targets 3.2. Analyse and interpret budget and actual financial information to monitor and review profit and productivity performance 3.3. Identify areas of under performance, recommend solutions, and take prompt action to rectify the situation 3.4. Plan and implement systems to ensure that mentoring and coaching are provided to support individuals and teams to effectively, economically and safely use resources 3.5. Negotiate recommendations for variations to operational plans and gain approval from ***designated persons/groups***

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ELEMENT	PERFORMANCE CRITERIA
	3.6. Develop and implement systems to ensure that procedures and records associated with documenting performance are managed in accordance with organisational requirements

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• literacy skills to access and use workplace information and to write a succinct and practical plan • technology skills to use software to produce and monitor the plan against performance indicators • planning and organisational skills • coaching skills to work with people with poor performance • numeracy skills to allocate and manage financial resources.
Required knowledge
• models and methods for operational plans • budgeting processes • alternative approaches to improving resource usage and eliminating resource inefficiencies and waste.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • development of an operational plan with details of how it will be implemented and monitored • knowledge of models and methods for operational plans.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • oral or written questioning to assess knowledge of budgeting processes • review of operational plan, key performance indicators and contingency plans • evaluation of employee recruitment and induction strategies • evaluation of processes implemented to acquire physical resources and services.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Diploma of Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Resource requirements may include:	• goods and services to be purchased and ordered • human, physical and financial resources - both current and projected • stock requirements and requisitions
Relevant personnel, colleagues and specialist resource managers may include:	• employees at the same level or more senior managers • managers • occupational health and safety committee/s and other people with specialist responsibilities • supervisors • union or employee representatives
Consultation processes may refer to:	• email/intranet communications, newsletters or other processes and devices which ensure that all employees have the opportunity to contribute to team and individual operational plans • mechanisms used to provide feedback to the work team in relation to outcomes of consultation • meetings, interviews, brainstorming sessions
Operational plans may also be termed:	• action plans • annual plans • management plans • tactical plans
Key performance indicators may refer to:	• measures for monitoring or evaluating the efficiency or effectiveness of a system which may be used to demonstrate accountability and to identify areas for improvements
Contingency plans may include:	• contracting out or outsourcing human resources and other functions or tasks • diversification of outcomes • finding cheaper or lower quality raw materials

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RANGE STATEMENT	
	and consumables • increasing sales or production • recycling and re-using • rental, hire purchase or alternative means of procurement of required materials, equipment and stock • restructuring of organisation to reduce labour costs • risk identification, assessment and management processes • seeking further funding • strategies for reducing costs, wastage, stock or consumables • succession planning
Organisation's policies, practices and procedures may include:	• organisational culture • organisational guidelines which govern and prescribe operational functions, such as the acquisition and management of human and physical resources • Standard Operating Procedures • undocumented practices in line with organisational operations
Designated persons/groups may include:	• groups designated in workplace policies and procedures • managers or supervisors whose roles and responsibilities include decision making on operations • other stakeholders such as Board members • other work groups or teams whose work will be affected by recommendations for variations

Unit Sector(s)

Unit sector	

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Competency field

Competency field	Management and Leadership - Management

Co-requisite units

Co-requisite units		

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BSBMGT617A Develop and implement a business plan

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to run a business operation and covers the steps required to develop and implement a business plan. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals who are running an organisation or who take a senior role in determining the effective functioning and success of the organisation. As such, they may oversee the work of a number of teams and other managers. Business plans are critical tools for business growth and development. They will vary depending on the needs of the organisation. This unit covers the typical elements of a business plan and the standard approaches to be used in implementing a business plan. The business plan should be supported by a strategic plan, and may also be supported by a marketing plan and cash flow forecasts.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop business plan	1.1. Review and evaluate pre-existing ***strategic***, ***business and operational plan***, if available 1.2. Analyse and interpret business vision, mission, values and objectives 1.3. Consult with ***key stakeholders*** 1.4. Review market requirements for the product or service, profile customer needs and research pricing options 1.5. Develop ***performance objectives and measures*** through consultation with key stakeholders 1.6. Identify financial, human and physical resource requirements for the business 1.7. Consider any permits or licences that may be required for new activity 1.8. Write ***business plan***
2. Monitor performance	2.1. Communicate business plan to all relevant parties and ensure understanding of performance requirements and timeframes 2.2. Ensure skilled labour is available to implement plan 2.3. Test performance measurement systems and refine, if necessary 2.4. Ensure timely reports on all key aspects of the business are available, user-friendly and balanced in terms of financial and non-financial performance 2.5. Report system failures, product failures and variances to the business plan as they occur
3. Respond to performance data	3.1. Analyse performance reports against planned objectives 3.2. Review performance indicators and refine if necessary 3.3. Ensure groups and individuals contributing to under-performance are ***coached***, and provide training where appropriate 3.4. Review system processes and work methods regularly as part of continuous improvement

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• analytical and research skills to review the market, to research competitors and to review pricing structures • coaching and communication skills to remediate any under-performance in the work group or individuals • planning and organising skills to sequence activities and to develop a logical structure.
Required knowledge
• performance measurement approaches and benchmarking • options for developing business plans.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • analysis of the strengths and weaknesses of a range of business plans • implementation of a business plan including evaluation of performance against documented indicators in key results areas • knowledge of performance measurement approaches and benchmarking.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • assessment of written reports/examples of business plans and their outcomes • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • oral or written questioning to assess knowledge of options for developing business plans • review of development of performance objectives and measures • review of how business plan was communicated to all relevant parties.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Advanced Diploma of Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Strategic, business and operational plan may include:	• previously formulated:
	  • action plan
	  • business goals
	  • competitor analysis
	  • financing arrangements or financial targets
	  • management arrangements and/or personnel requirements
	  • marketing approaches
	  • product or service research or analysis

Key stakeholders may include:	• business partners or financiers • customers • shareholders • staff • technical experts or advisers
Performance objectives and measures may relate to:	• efficiency measures • input measures such as staff time or dollars allocated • outcomes measures • qualitative indicators such as feedback from customers, effect on the wider market or competitors, staff reports • quantitative indicators, such as numbers produced and sold, turnover, customer satisfaction ranking, lower staff turnover

Business plan includes:	• description of the business
	• business products and services
	• marketing activity
	• financial indicators
	• productivity and performance targets for key result areas such as:
	  • community awareness or branding
	  • environmental impact

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RANGE STATEMENT	
	• governance or management • quality • sales • triple bottom line • workforce
Coaching refers to:	• informal on-the-job and off-the-job advice and training to improve performance

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Management

Co-requisite units

Co-requisite units		

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BSBMKG414A Undertake marketing activities

Modification History

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to plan, implement and manage basic marketing and promotional activities.
No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.
This unit describes the performance outcomes, skills and knowledge required to plan, implement and manage basic marketing and promotional activities.
No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

This unit covers general and basic marketing and promotional activities that do not require detailed or complex planning or implementation. It could be undertaken as part of a broader role of a person in a small enterprise, or as part of a marketing plan for a larger enterprise.
This unit covers general and basic marketing and promotional activities that do not require detailed or complex planning or implementation. It could be undertaken as part of a broader role of a person in a small enterprise, or as part of a marketing plan for a larger enterprise.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Employability Skills Information

This unit contains employability skills.
This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.
Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
Elements describe the essential outcomes of a unit of competency.
Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

Elements and Performance Criteria

Element	Performance Criteria
1 Plan marketing activities	1.1 Identify **need** for **marketing activities**
	1.2 Investigate previous marketing activities for relevant information
	1.3 Identify and analyse relevant policies and procedures
	1.4 Identify **outcomes** expected from marketing activities
	1.5 Undertake **analysis** of collected basic marketing information
	1.6 Develop and document **work activity plans** for marketing activities
	1.7 Obtain approval of plans from **relevant enterprise personnel**
2 Implement and manage marketing activities	2.1 Determine and access **resources** required for work activities
	2.2 Undertake marketing activities
	2.3 Assign responsibilities and functions to **relevant personnel performing specific marketing functions**
	2.4 Monitor marketing activities, reviewing and

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			amending activity plans as required
3	Review marketing activities	3.1	Measure and document outcomes of marketing activities
		3.2	Review marketing activities against expected outcomes and document identified improvements
		3.3	Prepare reports of marketing activities and communicate to relevant enterprise personnel

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

literacy skills to read a variety of texts, to prepare general information and papers, and to write formal and informal letters according to target audience

planning skills to develop implementation schedules

problem-solving skills to address issues which may affect plans and their implementation.

Required knowledge

key provisions of relevant legislation from all levels of government that may affect aspects of business operations, such as:

anti-discrimination legislation

ethical principles

codes of practice

privacy laws

environmental issues

occupational health and safety

organisational policies and procedures

specific product knowledge related to goods and services being marketed.

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Evidence Guide

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The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: planning and implementing marketing activities reviewing the effectiveness of the marketing plan documenting the activities and processes worked with knowledge of relevant legislation.
Context of and specific resources for assessment	Assessment must ensure: access to an actual workplace or simulated environment access to office equipment and resources examples of goods/services to be marketed examples of marketing plans.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate review of work activity plans for marketing activities analysis of responses to case studies and scenarios demonstration of techniques observation of presentations oral or written questioning to assess knowledge of marketing techniques and strategies analysis of documentation outlining the outcomes of marketing activities

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	review of marketing activities reports.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: other marketing, advertising or public relations units.

Range Statement

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The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Need may be determined by:	analysis of sales figures and other performance data analysis of client information direction from relevant enterprise personnel development of new products and services
Marketing activities may include:	attendance at trade shows, conferences and other events basic advertising development and distribution of general promotional and informational materials development and distribution of samples, case studies, testimonials and other evidence of enterprise activity development of displays and signs development of media releases, articles and media background information information sessions for clients, suppliers and stakeholders online information telephone promotions
Outcomes may include:	projections for potential client inquiries projections for detailed potential client follow-up projections for sales and service levels
Analysis may include:	market definition, statistics and basic research basic market segmentation target audience profiles
Work activity plans may include:	human resource plans plans for other required resources

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	financial plans time plans detailed implementation plans (covering the how/what/when of activities) activity monitoring and evaluation plans
Relevant enterprise personnel might include:	coordinators owners managers section leaders supervisors team leaders
Resources may include:	human resources finance resource contributions from suppliers and/or partners
Relevant personnel performing specific marketing functions may include:	administrators copywriters desktop publishers external consultants graphic artists and designers marketing specialists printers, sign writers and other tradespeople

Unit Sector(s)

empty
empt

Competency field

Business Development - Marketing
Business Development - Marketing

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BSBMKG609A Develop a marketing plan

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to research, develop and present a marketing plan for an organisation. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals working in senior marketing positions who are responsible for formulating a marketing plan by developing specific marketing strategies and tactics in accordance with the organisation's overall marketing objectives. Individuals operating at this level may receive input from people working under their supervision who collect information required to devise specific marketing strategies and tactics. This unit builds on BSBMKG608A Develop organisational marketing objectives, which covers the skills and knowledge required to conduct a strategic analysis to formulate organisational marketing objectives.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Devise marketing strategies	1.1. Evaluate ***marketing opportunity options*** that address organisational objectives, and evaluate their risks and returns in the selection process 1.2. Develop ***marketing strategies*** that address strengths and opportunities within the organisation's projected capabilities and resources 1.3. Develop strategies which increase resources or organisational expertise where gaps exist between current capability and marketing objectives 1.4. Develop feasible marketing strategies and communicate reasons that justifies their selection 1.5. Ensure strategies align with organisation's strategic direction 1.6. Develop a ***marketing performance review strategy***, incorporating appropriate marketing metrics to review of organisational performance against marketing objectives
2. Plan marketing tactics	2.1. Detail tactics to implement each marketing strategy in terms of scheduling, costing, accountabilities and persons responsible 2.2. Identify coordination and monitoring mechanisms for scheduled activities 2.3. Ensure tactics are achievable within organisation's projected capabilities and budget 2.4. Ensure tactics meet ***legal and ethical requirements*** 2.5. Ensure tactics provide for ongoing review of performance against objectives and budgets, and allow marketing targets to be adjusted if necessary
3. Prepare and present a marketing plan	3.1. Ensure marketing plan meets organisational, as well as marketing, objectives and incorporates ***marketing approaches*** and a strategic ***marketing mix*** 3.2. Ensure marketing plan contains a rationale for objectives and information that supports the choice of strategies and tactics 3.3. Present marketing plan for approval in the required format and timeframe 3.4. Adjust marketing plan in response to feedback from key stakeholders and disseminate for implementation within the required timeframe

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- culturally appropriate communication skills to relate to people from diverse backgrounds and people with diverse abilities
- leadership skills to gain trust and confidence of colleagues and clients
- literacy skills to identify company and product or service information, to interpret strategic reports, to write in a range of styles for different audiences and to interpret legal requirements, company policies and procedures
- numeracy skills to analyse, create and manage budgets for marketing activities
- organisational and time management skills to sequence tasks and meet time lines
- presentation and facilitation skills to present a marketing plan.

Required knowledge

- organisational structure, products and services, overall strategic and marketing objectives
- key provisions of relevant legislation from all forms of government, codes of practice and national standards that may affect aspects of business operations such as:
  - anti-discrimination legislation and principles of equal opportunity, equity, and diversity
  - Australian Direct Marketing Association (ADMA) Direct Marketing Code of Practice
  - Australian E-commerce Best Practice Model
  - Australian Government Policy Framework for Consumer Protection in Electronic Commerce
  - confidentiality requirements
  - copyright laws
  - defamation laws
  - Free TV Australia Commercial Television Industry Code of Practice
  - privacy laws
  - sweepstakes regulations
  - Trade Practices Act
- industry products and services knowledge.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • devising, documenting and presenting a marketing plan detailing approaches and the marketing mix to achieve organisational marketing objectives.
Context of and specific resources for assessment	Assessment must ensure: • access to office equipment and resources • access to strategic plans and marketing objectives.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • assessment of written marketing plans outlining marketing strategies and tactics to be used in achieving organisational marketing objectives • demonstration of techniques used to develop marketing strategies in conjunction with relevant persons • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • observation of presentation of marketing plan to relevant persons • oral or written questioning • review of testimony from team members, colleagues, supervisors or managers.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • BSBMKG608A Develop organisational marketing objectives • other marketing units.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Marketing opportunity options may include:	• cooperative ventures • exports • extending, expanding or otherwise changing an existing business • franchising • joint ventures • new businesses • new products or services for existing markets • new products or services for new markets • potential for greater penetration of existing markets with existing products or services • strategic alliances • take-overs
Marketing strategies may include:	• achieving lower costs of production and distribution than competitors • creating a very different product line or service so that the business becomes a class leader in the industry • distribution • pricing, presentation and display of products or services • product design and packaging • product range and mix • promotion and advertising • pursuing cost leadership or product differentiation within a specialist market segment
Marketing performance review strategy may include:	• comparative analysis • competitive analysis • life cycle models • product portfolio analysis • strengths, weaknesses, opportunities, threats (SWOT) analysis

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RANGE STATEMENT	
	• value chain analysis
Legal and ethical requirements may include:	• codes of practice • cultural expectations and influences • environmental issues • ethical principles • legislation • policies and guidelines • regulations • safety issues • security and privacy issues • social responsibilities • societal expectations
Marketing approaches may include:	• differentiated target marketing • direct marketing • direct response marketing • e-business • mass distribution • mass marketing • personal selling • product variety marketing • promotion marketing

Marketing mix may include:	• product or service variables such as:
	  • technical features
	  • design
	  • quality
	  • range
	  • safety features
	• pricing
	• promotion
	• distribution
	• level of service

Unit Sector(s)

Unit sector	

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Competency field

Competency field	Business Development - Marketing

Co-requisite units

Co-requisite units		

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BSBOHS201A Participate in OHS processes

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to participate in workplace occupational health and safety (OHS) processes to protect workers own health and safety, and that of others. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals who require a fundamental knowledge of OHS to carry out their own work which may be in a defined context under direct supervision or with some individual responsibility. This unit has broad applicability across industries and workplace contexts.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Work safely	1.1. Follow established ***safety procedures*** when conducting work 1.2. Carry out pre-start systems and equipment checks in accordance with workplace procedures
2. Implement workplace safety requirements	2.1. Identify ***designated persons*** for reporting queries and concerns about safety in the workplace 2.2. Identify existing and potential ***hazards*** in the workplace, report them to designated persons and record them in accordance with workplace procedures 2.3. Identify and implement workplace procedures and work instructions for controlling risks 2.4. Report ***emergency incidents*** and injuries to designated persons
3. Participate in OHS consultative processes	3.1. Contribute to workplace meetings, inspections or other consultative activities 3.2. Raise OHS issues with designated persons in accordance with organisational procedures 3.3. Take actions to eliminate workplace hazards or to reduce ***risks***
4. Follow safety procedures	4.1. Identify and report emergency incidents 4.2. Follow organisational procedures for responding to emergency incidents

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• literacy skills to interpret safety signs, symbols and notices • problem-solving skills to analyse options in an emergency situation.
Required knowledge
• responsibilities of employers and employees under relevant health and safety legislation • emergency procedures including procedures for fires and accidents • commonly used hazard signs and safety symbols.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • accurately following all relevant safety procedures • identifying and reporting hazards to designated personnel • knowledge of relevant health and safety legislation • knowledge of relevant materials, equipment and work processes.
Context of and specific resources for assessment	Assessment must ensure: • safety processes, hazards and risk are relevant to the area of work
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • analysis of responses to case studies and scenarios • demonstration of techniques • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • review of documentation identifying and reporting emergency incidents
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units related to the work environment

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Safety procedures may include:	• completing required documentation
	• local, state and federal legislation
	• Materials Safety Data Sheets (MSDSs)
	• National Health and Medical Research Council guidelines
	• following OH&S guidelines relevant to workplace
	• maintenance and use of cleaning apparatus in a work environment, such as;
	  • disposing of spilled substances, dangerous products, 'sharps' and waste correctly
	  • maintaining stocks of cleaning equipment (eg. disposable gloves, liquid repellent aprons, disinfectant)
	  • sterilising and/or disposing of cleaning equipment
	  • using appropriate cleaning equipment to clean spillages and breakages
	  • wearing protective clothing, protective eye wear when in contact with body fluids or chemicals that may splash
	• using and storing toxic and hazardous materials correctly
	• keeping workplace clean and tidy
	• office practice manual
	• displaying health and safety brochures, magazines and other material
	• undergoing operator training when using new equipment or processes
	• special guidelines in a medical setting:
	  • RACGP Code of Practice for the Management of Health Information in General Practice
	  • RACGP Entry Standards for General

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RANGE STATEMENT	
	Practices • RACGP Sterilisation/Disinfection guidelines for General Practice
Designated persons may include:	• designated health and safety officers • health and safety representatives • supervisors • managers • team leaders • other persons authorised or nominated by the enterprise or industry

Hazards may include anything which is a source of:	• potential harm in terms of human injury or ill health
	• damage to property
	• damage to the environment
	• potential harm in terms of human injury or ill health including:
	  • toxic or hazardous materials
	  • hazardous work processes
	  • unsafe work practices
	  • hazardous equipment
	  • unstable personnel
	• potential harm in a medical setting:
	  • blood
	  • breakage / spillage
	  • drug hold-ups
	  • needle sticks
	  • medical emergencies (eg. Falls, bleeding, seizures, fainting, collapses, panic attack, psychosis)
	  • spread of infection
	• potential sources of infection:
	  • breakages
	  • contaminated waste
	  • patients with colds, flu and other infectious diseases
	  • sharps (eg. needles, scalpel blades)
	  • spillage
	  • used dressings, bandages and equipment
	  • unsterilised/poorly sterilised equipment and

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RANGE STATEMENT	
	work surfaces • unwashed hands
Risk is:	• the chance of something occurring that will result in injury or damage
Emergency incidents may include:	• accidents • emergency situations • fire • flood • sudden illness • incidents • external threats

Unit Sector(s)

Unit sector	

Competency field

Competency field	Regulation, Licensing and Risk - Occupational Health and Safety

Co-requisite units

Co-requisite units		

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BSBOHS403B Identify hazards and assess OHS risks

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to identify hazards and to assess occupational health and safety (OHS) risks in the workplace. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals with supervisory responsibilities in managing OHS in the workplace who identify hazards and assess risks using developed processes and tools. The unit also introduces basic incident analysis as an important skill underlying incident investigation, which is addressed in greater complexity in BSBOHS508B Participate in the investigation of incidents.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Investigate incidents for prevention	1.1. Select and use ***appropriate techniques*** to investigate ***incidents*** 1.2. Establish ***actions and events*** leading up to an incident, during an incident and through the post incident management phase 1.3. Analyse incident to identify the ***hazard/s*** 1.4. Analyse incident to identify intervention points to prevent re-occurrence
2. Access existing sources of information and data to identify hazards	2.1. Review ***workplace sources of information and data*** to access information and data, and to assist in identifying hazards 2.2. Access ***external sources of information and data*** as required 2.3. Seek input from ***stakeholders***, ***key personnel*** and ***OHS specialists***
3. Conduct hazard identification	3.1. Seek formal and informal ***techniques and tools*** to identify hazards 3.2. Select and modify a suitable technique/tool as appropriate to identify hazards 3.3. Review hazard identification techniques and tools in consultation with workers in the area, and OHS specialists if required, to ensure they are suitably comprehensive 3.4. Utilise techniques and tools and other appropriate ***hazard identification procedures*** to identify hazards 3.5. Provide employees and their representatives with an opportunity to participate in workplace hazard identification
4. Assess risk	4.1. Select and use a ***risk assessment tool*** to identify key factors contributing to risk 4.2. Apply workplace sources of information and data to evaluate the effectiveness of risk controls 4.3. Prioritise risks considering the severity and likelihood of the consequences 4.4. Involve stakeholders and key personnel in risk assessment 4.5. Document the method of risk assessment
5. Participate in implementation	5.1. Maintain a ***hazard register*** relevant to the workplace 5.2. Identify the level of authority within the

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ELEMENT	PERFORMANCE CRITERIA
process	organisation to address the risk/s 5.3. Document and communicate outcomes of hazard identification and risk assessments to key personnel and stakeholders 5.4. Monitor and evaluate the effectiveness of own performance in identifying hazards and conducting risk assessments

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- culturally appropriate communication skills to relate to people from diverse backgrounds and people with diverse abilities across all levels of an organisation
- information management skills to evaluate OHS data
- interpersonal skills to establish rapport and to build networks with a range of internal and external stakeholders
- organisational and time management skills to sequence tasks and meet timelines
- research and data analysis skills to evaluate interactions between employees, their activities, equipment, environment and work systems
- technology skills to access internal and external OHS data.

Required knowledge

- basic principles of incident causation and injury processes
- legislative requirements for:
  - consultation and communication
  - information and data collection
  - notification of incidents
  - record keeping
  - reporting of incidents
  - specific hazards
- organisational culture as it impacts on the workgroup
- organisational policies and procedures for managing OHS
- organisational work processes for managing OHS
- appropriate data collection methods for OHS issues
- concepts of risks, factors that affect risk and difference between a hazard and a risk
- internal and external sources for OHS information and data
- principles and practices of systematic approaches to managing OHS
- principles, tools and techniques to identify and control workplace hazards and to manage risks in the OHS context
- relevant state/territory and commonwealth OHS legislation, codes of practice and standards
- roles and responsibilities of personnel as specified in relevant OHS legislation
- sources of OHS data.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • identification, analysis and evaluation of multiple workplace hazards using appropriate techniques an tools in a workplace • knowledge of relevant state/territory and commonwealth OHS legislation, codes of practice and standards.
Context of and specific resources for assessment	Assessment must ensure: • access to an actual or simulated workplace • access to office equipment and resources • access to relevant legislation, standards and guidelines • access to relevant OHS documentation and records.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • analysis of responses to case studies and scenarios • demonstration of techniques used to identify, analyse and evaluate OHS hazards and risks • demonstration of the application of OHS legislation in conducting hazard identification and risk management activities • direct questioning combined with review of portfolios of evidence and third party reports of on-the-job performance by the candidate • oral or written questioning to assess knowledge of concepts of risks, factors that affect risk and difference between a hazard and a risk • review of techniques/tools used to identify hazards • evaluation of a risk assessment tools selected and used to identify key factors contributing to risk • review of risk prioritisation • review of hazard register.

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EVIDENCE GUIDE	
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • BSBOHS404B Contribute to the implementation of strategies to control OHS risk.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Appropriate techniques may include:	• examination of relevant information and data • inspections • interviews • simulations • timeline of actions and events • use of accident models

Incidents may include:	• an event resulting in or having a potential for:
	  • injury
	  • ill health
	  • damage
	  • or loss

Actions and events may include:	• all actions and events that may have contributed to the occurrence or severity of the incident, including:
	  • design decisions
	  • systems
	  • people
	  • tools
	  • equipment
	  • materials
	  • fixtures
	  • time and nature of the injury

Hazard/s may include:	• sources or situations with a potential for harm in terms of:
	  • injury
	  • ill health
	  • damage to property
	  • damage to the environment
	  • or a combination of the above

Workplace sources of information and data may	• audits • hazard, incident and investigation reports

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RANGE STATEMENT	
include:	• incident investigations • legislation, standards, manufacturers' manuals and specifications available at the workplace • material safety data sheets (MSDSs) and registers • minutes of meetings • reports • workplace inspections
External sources of information and data may include:	• employer groups • industry bodies • OHS professional bodies • OHS specialists • Australian Standards • manufacturers' manuals and specifications • regulatory authorities (for other relevant legislation such as acts, regulations, codes of practice) • unions • websites, journals and newsletters
Stakeholders may include:	• community • employees • health and safety, and other employee representatives • managers • OHS committees • supervisors
Key personnel may include:	• managers from other areas • people involved in OHS decision making or who are impacted by decisions
OHS specialists may include:	• ergonomists • health professionals • injury management advisors • occupational hygienists
Techniques and tools may include:	• body mapping • hazard identification procedures based on checklists • interviews • MSDSs • workplace processes such as 'walk throughs', surveys and inspections

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RANGE STATEMENT	

Hazard identification procedures may include:	• identifying employee concerns, such as through a hazard reporting system
	• input of managers, OHS representatives, OHS committee and others through consultative processes
	• job and work system analysis (JSA)
	• reviews of:
	  • hazard and incident reports
	  • investigations
	  • OHS records
	  • plant and equipment maintenance records
	  • registers of hazardous substances and dangerous goods

Risk assessment tools may include:	• checklists • matrix nomograms • codes of practice • standards • guidelines
Hazard register may include:	• a list of hazards • location of hazards • range of possible scenarios or circumstances under which hazards may cause injury or damage • results of a risk analysis related to the hazards

Unit Sector(s)

Unit sector	

Competency field

Competency field	Regulation, Licensing and Risk - Occupational Health and Safety

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Co-requisite units

Co-requisite units		

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BSBOHS404B Contribute to the implementation of strategies to control OHS risk

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to contribute to the implementation of strategies to control occupational health and safety (OHS) risks. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals with supervisory responsibilities for managing OHS in the workplace who contribute to the implementation of OHS risk controls in the workplace.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop option/s for risk control	1.1. Review ***hazard register***, outcomes of incident investigations and risk assessments to identify ***hazards*** requiring control action 1.2. Apply knowledge of OHS legislation and standards to develop a range of options to control specific ***risks*** in the workplace 1.3. Apply the ***principles of the hierarchy of control*** when developing risk control options 1.4. Seek input from ***stakeholders*** and ***key personnel*** 1.5. Seek advice from ***OHS specialists*** and ***technical advisors*** where required
2. Select appropriate option/s to control risks	2.1. Review outcomes of risk assessments to inform the process of selecting option/s to control risks 2.2. Prioritise appropriate interventions when selecting risk controls 2.3. Identify potential ***factors that may limit effectiveness of controls*** 2.4. Consult with and involve workplace stakeholders in selecting appropriate control options 2.5. Communicate recommendations for risk control to stakeholders
3. Contribute to implementation of controls	3.1. Seek appropriate authority and relevant resources to implement controls 3.2. Identify and document ***actions required to achieve change*** 3.3. Consult with and involve workplace stakeholders in implementation of change 3.4. Provide advice on the fitting, use, maintenance and storage of ***personal protective equipment*** (PPE)
4. Contribute to monitoring and evaluation of effectiveness of controls	4.1. Monitor and evaluate the extent of change as a consequence of new controls, in consultation with stakeholders 4.2. Monitor and document compliance with new procedures 4.3. Access ***workplace sources of information and data*** to evaluate effectiveness of risk controls and to check for new hazards introduced as a result of controls 4.4. Identify areas for further improvement in consultation with stakeholders and action as

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ELEMENT	PERFORMANCE CRITERIA
	appropriate 4.5. Develop and document an improvement plan

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- consultation and negotiation skills to develop risk management plans and implement risk controls effectively
- culturally appropriate communication skills to relate to people from diverse backgrounds and people with diverse abilities across all levels of an organisation
- evaluation skills to analyse the effectiveness of own performance in implementing strategies chosen to control OHS risks
- information management skills to evaluate OHS data
- interpersonal skills to establish rapport and build networks with a range of internal and external stakeholders
- literacy skills to prepare reports for a range of target groups
- organisational and time management skills to sequence tasks and meet timelines
- research and data analysis skills to assess resources required to systematically manage OHS and to analyse relevant workplace information and data
- research and data analysis skills to evaluate interactions between employees, their activities, equipment, environment and work systems
- technology skills to access internal and external OHS data.

Required knowledge

- appropriate data collection methods for OHS purposes
- characteristics, mode of action and measurement of major hazard types
- concepts of risks, factors that affect risk and difference between a hazard and a risk
- internal and external sources for OHS information and data
- legislative requirements for:
  - consultation and communication
  - information and data collection
  - notification of incidents
  - record keeping
  - reporting of incidents
  - specific hazards
- organisational culture as it impacts on the workgroup
- organisational policies and procedures for managing OHS
- organisational work processes and structure
- principles and practices of systematic approaches to managing OHS
- principles of incident causation and injury processes
- principles of the hierarchy of control
- principles, tools and techniques to identify and control workplace hazards and

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REQUIRED SKILLS AND KNOWLEDGE
manage risks in the OHS context • relevant state/territory and commonwealth OHS legislation, codes of practice and standards • requirements for individual fitting, use, maintenance and storage of a range of PPE items • roles and responsibilities of personnel as specified in relevant OHS legislation • sources of OHS data • standard industry controls for a range of hazards.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • contribution to the development and implementation of risk control options to control risks associated with hazards in the workplace or simulated environment • contribution to the monitoring and evaluation of the effectiveness of risk controls implemented and the making of appropriate adjustments where necessary • knowledge of the principles of the hierarchy of control.
Context of and specific resources for assessment	Assessment must ensure: • access to office equipment and resources • access to relevant legislation, standards and guidelines • access to workplace documentation.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • analysis of responses to case studies and scenarios • demonstration of techniques used to select, implement, monitor and evaluate risk controls • direct questioning combined with review of portfolios of evidence and third party reports of on-the-job performance by the candidate • observation of the application of risk control techniques • oral or written questioning to assess knowledge of the principles, tools and techniques to identify and control workplace hazards and manage risks in the OHS context • review of communication to stakeholders of recommendations for risk control • review of documented compliance with new procedures • evaluation of improvement plan.

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EVIDENCE GUIDE	
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • BSBOHS403B Identify hazards and assess OHS risks.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Hazard register may include:	• a list of hazards • location of hazards • range of possible scenarios or circumstances under which hazards may cause injury or damage • results of the risk analysis related to the hazards

Hazards may include:	• sources of potential harm in terms of human injury, ill health, damage to property, damage to the environment, or a combination of these, including:
	  • biological
	  • chemical
	  • environment
	  • mechanical and/or electrical
	  • physical
	  • psychosocial
	  • radiological
	  • nuclear

Risks may include:	• the chance of something occurring that will result in injury or damage measured in terms of consequences (injury or damage) and likelihood of the consequence

Principles of the hierarchy of control may include:	• eliminating hazards
	• and where this is not practicable, minimising risk by:
	  • substitution
	  • isolating hazard from personnel
	  • using engineering controls
	  • using administrative controls (such as procedures, training)
	  • using PPE

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RANGE STATEMENT	
Stakeholders may include:	• community • employees • health and safety, and other employee representatives • managers • OHS committees • supervisors
Key personnel may include:	• managers from other areas • people involved in OHS decision making or who are impacted by decisions
OHS specialists may include:	• ergonomists • health professionals • injury management advisors • occupational hygienists
Technical advisors may include:	• engineers (design, acoustic, safety, mechanical, civil) • legal practitioners • maintenance and tradespeople • workplace trainers and assessors
Factors that may limit effectiveness of controls may include:	• cultural diversity • language • literacy and numeracy • shift work and rostering arrangements • training required • workplace culture related to OHS, including commitment by managers and supervisors, and compliance with procedures and training • workplace organisational structures (for example geographic, hierarchical)
Actions required to achieve change may include:	• development of new procedures or revision of existing procedures • purchase of equipment or modification of equipment • training

Personal protective equipment may include:	• equipment designed to be worn by a person to provide protection from hazards such as:
	  • clothing and footwear
	  • face and eye protection
	  • hand protection
	  • head protection

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RANGE STATEMENT	
	• hearing protection • respiratory protection
Workplace sources of information and data may include:	• audits • Australian Standards • hazard and incident reports • incident investigations • manufacturers' manuals and specifications • material safety data sheets (MSDSs) and registers • minutes of meetings • OHS legislation • reports • workplace inspections

Unit Sector(s)

Unit sector	

Competency field

Competency field	Regulation, Licensing and Risk - Occupational Health and Safety

Co-requisite units

Co-requisite units		

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BSBOHS504B Apply principles of OHS risk management

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to use a generic approach to identify hazards, and to assess and control occupational health and safety (OHS) risks. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals with managerial responsibility for providing a systematic approach to hazard identification, risk assessment and risk control, with the emphasis on elimination or, where this is not possible, minimisation of risk. It also includes conceptual models for understanding the nature of hazards. The unit provides a basis for the hazard specific competencies in BSBOHS505C Manage hazards in the work environment, and BSBOHS506B Monitor and facilitate the management of hazards associated with plant. This unit is underpinned by BSBOHS403B Identify hazards and assess OHS risks, and BSBOHS404B Contribute to the implementation of strategies to control OHS risk. A more advanced approach to risk assessment, which identifies the separate elements of risk analysis and risk evaluation, is provided in BSBOHS603B Analyse and evaluate OHS risk.

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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Access sources of information and data to identify hazards	1.1. Access ***external sources of information and data*** to assist in identifying ***hazards*** 1.2. Review ***workplace sources of information and data*** to access and assist in identification of hazards 1.3. Seek input from ***stakeholders***, ***key personnel*** and ***OHS specialists*** 1.4. Conduct formal and informal research to ensure currency of information with ***workplace issues***
2. Analyse the work environment to identify hazards	2.1. Define, document and communicate ***occasions when action for hazard identification is required*** 2.2. Source ***tools*** to assist in analysing potential hazards 2.3. Examine ***task demands*** and ***task environment*** for impact on the person to identify situations with a potential for injury or ill health 2.4. Examine workforce structure, organisation of work and work relationships to identify situations with a potential for injury or ill health 2.5. Examine work environment for ***agents*** with a potential for injury or ill health 2.6. Seek input from stakeholders to clarify and confirm issues
3. Assess risk associated with hazards	3.1. Identify ***factors contributing to risk*** 3.2. Identify current risk controls for each hazard 3.3. Evaluate adequacy of current controls (if any), taking account of ***relevant standards*** and knowledge 3.4. Identify discrepancies between current controls and required quality of control 3.5. ***Prioritise*** hazards requiring further control action 3.6. Document method and outcomes of ***risk assessment***
4. Control risk associated with hazards	4.1. Develop a range of control options in consultation with stakeholders, taking account of the outcomes of the risk assessment and the ***hierarchy of control*** 4.2. Identify potential ***factors impacting on the effectiveness of controls*** 4.3. Seek advice from OHS specialists and key personnel if required 4.4. Identify and seek appropriate authority and relevant resources to initiate and maintain controls 4.5. Identify and document actions required to achieve

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ELEMENT	PERFORMANCE CRITERIA
	change 4.6. Analyse extent of change and reduction in risk, as a result of controls
5. Maintain hazard identification and risk control processes	5.1. Establish and maintain a ***risk register*** relevant to the workplace 5.2. Document and communicate risk management procedures to stakeholders and key personnel, as appropriate 5.3. Document and communicate outcomes of risk management processes to stakeholders and key personnel, as appropriate 5.4. Involve stakeholders and operational staff in risk management processes 5.5. Identify situations where OHS specialists may be required
6. Monitor and review risk management processes	6.1. Determine frequency, method and scope of review in consultation with workplace stakeholders and key personnel 6.2. Ensure stakeholders and key personnel have input to the review 6.3. Identify areas for improvement in the risk management processes and make recommendations 6.4. Prepare action plans, including allocated responsibilities and timeframes for implementation 6.5. Regularly review effectiveness of risk management processes

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- analytical skills to:
  - identify areas for OHS risk improvement
  - analyse relevant workplace information and data
  - contribute to the assessment of the resources needed to systematically manage OHS and, where appropriate, access resources
- attention to detail when making observations and recording outcomes
- research skills to access relevant OHS information and data
- numeracy skills to carry out simple arithmetical calculations (e.g. % change), and to produce graphs of workplace information and data to identify trends and recognise limitations
- communication skills to:
  - conduct effective formal and informal meetings and to communicate effectively with personnel at all levels of the organisation, OHS specialists and, as required, emergency services personnel
  - prepare reports for a range of target groups including OHS committee, OHS representatives, managers and supervisors
  - use language and literacy skills appropriate to the workgroup and the task
- consultation and negotiation skills to develop plans and to implement and monitor designated actions
- project management skills to achieve change in OHS matters
- organisational skills to manage own tasks within a timeframe
- information technology skills to access and enter internal and external information and data on OHS and to use a range of communication media

Required knowledge

- organisational behaviour and culture as it impacts on OHS and on change
- basic physiology relevant to understanding mode of action of physical, biological and chemical agents on the body and how they produce harm
- basic principles of incident causation and injury processes
- characteristics, mode of action and units of measurement of major hazard types
- concept of common law duty of care
- difference between hazard and risk
- ethics related to professional practice
- how the characteristics and composition of the workforce impact on risk and the systematic approach to managing OHS, for example:
  - communication skills

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REQUIRED SKILLS AND KNOWLEDGE
• cultural background/workplace diversity • gender • labour market changes • language, literacy and numeracy • structure and organisation of workforce e.g. part-time, casual and contract workers, shift rosters, geographical location • workers with specific needs • internal and external sources of OHS information and data • language, literacy and cultural profile of the workgroup • legislative requirements for OHS information and data, and consultation • limitations of generic hazard and risk checklists, and risk ranking processes • methods of providing evidence of compliance with OHS legislation • nature of workplace processes (including work flow, planning and control) and hazards relevant to the particular workplace • organisational culture as it impacts on the workgroup • organisational OHS policies and procedures • other function areas that impact on the management of OHS • principles and practices of systematic approaches to managing OHS • professional liability in relation to providing advice • requirements under hazard specific OHS legislation and codes of practice • risk as a measure of uncertainty and the factors that affect risk • roles and responsibilities under OHS legislation of employees, including supervisors and contractors • standard industry controls for a range of hazards • state/territory and commonwealth OHS legislation (acts, regulations, codes of practice, associated standards and guidance material) including prescriptive and performance approaches and links to other relevant legislation such as industrial relations, equal employment opportunity, workers compensation, rehabilitation • structure and forms of legislation including regulations, codes of practice, associated standards and guidance material • types of hazard identification tools, including job safety analysis (JSA)

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential:
	• products used in:
	  • the application of a risk management approach to identifying hazards
	  • assessing OHS risk
	  • controlling OHS risk
	• how these products were developed and implemented
	• knowledge of relevant OHS legislation (acts, regulations, codes of practice, associated standards and guidance material.

Context of and specific resources for assessment	Assessment must ensure: • access to workplace or simulated workplace • access to workplace documentation • access to office equipment and resources • access to relevant legislation, standards and guidelines relating to risks found in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • analysis of responses to case studies and scenarios • assessment of written reports on the effectiveness of the hazard identification, risk assessment, control and management actions taken • demonstration of techniques used to identify hazards, assess associated risks, control monitor and evaluate risks • direct questioning combined with review of portfolios of evidence and third party reports of on-the-job performance by the candidate • observation of performance in role plays • observation of presentations • oral or written questioning to assess knowledge of

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EVIDENCE GUIDE	
	the OHS information system • review of action plans • written reports on hazard identification and risk management activities, matrices and measurements undertaken.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • BSBOHS403B Identify hazards and assess OHS risks • BSBOHS404B Contribute to the implementation of strategies to control OHS risk • BSBOHS603B Analyse and evaluate OHS risk.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
External sources of information and data may include:	• databases with national and state injury data such as National Industrial Chemicals Notification and Assessment Scheme (NICNAS) • employer groups • industry bodies • journals and websites • legislation, codes of practice and standards • manufacturers' manual and specifications • OHS regulatory authorities • OHS specialists • unions.
Hazards may include:	• source or a situation with a potential for harm in terms of human injury or ill health • damage to property • damage to the environment • or a combination of these.
Workplace sources of information and data may include:	• audits • employees • hazard, incident and investigation reports • manufacturers' manuals and specifications • material safety data sheets (MSDSs) • minutes of meetings • OHS representatives • reports • workplace inspections.
Stakeholders include:	• employees • health and safety, and other employee representatives • managers • OHS committees • supervisors.

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RANGE STATEMENT	
Key personnel may include:	• managers from other areas • people involved in OHS decision making or who are affected by OHS decisions
OHS specialists may include:	• engineers • ergonomists • occupational hygienists • organisational psychologists • toxicologists • workplace injury and return to work advisors.

Workplace issues may include:	• changes in equipment, including technology
	• changes in social, political or community environment
	• changes in work organisation, including:
	  • contracting
	  • hire arrangements
	  • casualisation
	  • supervisory arrangements
	  • outworkers
	  • rosters
	  • shift work
	  • work hours
	  • work relations
	• changes in work practice
	• changes to legislation and standards
	• new knowledge on hazards
	• outcomes of court rulings.

Occasions when action for hazard identification is required may include:	• at design or pre-purchase of buildings, equipment and materials • at regular intervals during normal operations • before changes are made to workplace, equipment, work processes or work arrangements • commissioning or pre-implementation of new processes or practices • following an incident report • new forms of work and organisation of work • planning major tasks or activities, such as equipment shut-downs • prior to disposal of equipment, buildings or materials

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RANGE STATEMENT	
	• when new knowledge becomes available.
Tools may include:	• audits • cause and effect diagrams • JSA • surveys.
Task demands may include:	• arousal and alertness • machine pacing or time pressure to complete a task • physical or physiological demands • repetitive nature of task • required precision or accuracy.
Task environment may include:	• air quality • lighting • noise • thermal
Agents may be:	• biological • chemical • ergonomic • nuclear • physical • psychosocial • radiological.
Factors contributing to risk may include those associated with:	• equipment • frequency and duration of exposure • individual/operator • number of people exposed/involved • task • work environment • work organisation.
Relevant standards may include:	• Australian and industry standards • codes of practice • current knowledge related to the specific hazard and controls • current practice in the industry • legislation.
Prioritising hazards requiring further control action may include:	• other recognised processes • specially designed tools • standard ranking tools.
Risk assessment includes	• factors contributing to risk

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RANGE STATEMENT	
identification of:	• current controls and their adequacy • discrepancy between current control and required standard • prioritisation or ranking of a number of risks, where appropriate.
Hierarchy of control may include:	• eliminating hazards • and where this is not practicable, minimising risk by: • substitution • isolating the hazard from personnel • using engineering controls • using administrative controls (e.g. procedures, training) • using personal protective equipment (PPE).
Factors impacting on the effectiveness of controls may include:	• cultural diversity • language • literacy and numeracy levels • shift work and rostering arrangements • training required • workplace culture related to OHS including commitment by managers and supervisors and compliance with procedures and training • workplace organisational structures (size of organisation, geographic, hierarchical).
Risk register may include:	• list of hazards, their location and people exposed • possible control measures and dates for implementation • range of possible scenarios or circumstances under which the hazards may cause injury or damage • results of the risk analysis related to the hazards.

Unit Sector(s)

Unit sector	

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Competency field

Competency field	Regulation, Licensing and Risk - Occupational Health and Safety

Co-requisite units

Co-requisite units		

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BSBOHS603B Analyse and evaluate OHS risk

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to conduct a formal risk assessment comprising analysis and evaluation of occupational health and safety (OHS) risk. It has been designed to be consistent with the Australian Standard, AS/NZS 4360: 2004 Risk management. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit addresses the knowledge, processes and techniques necessary to analyse and evaluate OHS risk as part of the risk management process. OHS risk analysis involves defining the range of consequences, assessing the effectiveness of existing controls and deciding the likelihood of each consequence, and combining these in some way to obtain a level of risk. Risk evaluation is the comparison of pre established criteria for tolerance and the subsequent ranking of risks requiring control. The situation to be analysed and evaluated may involve a single task or a process comprising a series of tasks. Application of this unit must be consistent with the pertinent sections of the Australian Standard, AS/NZS 4360: 2004 Risk management.

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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Define parameters of the OHS risk study	1.1. Access information and data on the ***hazard*** identification process and the ***context*** of the OHS risk 1.2. Establish the ***scope of the OHS risk study*** 1.3. Divide the activity to be analysed into logical and manageable elements 1.4. Define and document the method of OHS risk analysis
2. Analyse the OHS risk of a task or process	2.1. Clarify the nature of the hazard including the process of injury or damage 2.2. Identify the need for further information using ***monitoring activities*** 2.3. Communicate ***information and data about the OHS risk*** to ***stakeholders*** 2.4. Consult and involve a range of stakeholders in the analysis 2.5. Identify and evaluate existing ***controls*** and their effectiveness, taking account of ***relevant standards*** 2.6. Determine specific scenarios to be considered 2.7. Determine the range of possible consequence/s from the various scenarios 2.8. Determine the likelihood of the occurrence of the consequence/s 2.9. Undertake steps to ensure ***comprehensive analysis of information, data and techniques*** 2.10. Rank OHS risks in order of level of risk 2.11. Consult ***OHS specialist advisors*** if required
3. Evaluate OHS risk of a task or process	3.1. Access and reference relevant legislation, codes of practice and standards 3.2. Consult stakeholders in determining criteria for OHS risk evaluation 3.3. Compare outcomes of OHS risk analysis with criteria to identify risks requiring further risk control and risks deemed as low as reasonably achievable 3.4. ***Document*** process and outcomes of ***analysis*** and ***evaluation*** in a manner that is accessible and facilitates understanding by stakeholders 3.5. Document outcomes to include explanation of the legal ramifications of decision making based on risk prioritisation

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- analytical skills to:
  - identify areas for improvement with OHS incidents
  - analyse relevant workplace information and data, and to make observations of workplace tasks and interactions between people, their activities, equipment, environment and systems
  - contribute to the assessment of resources needed to systematically manage OHS and, where appropriate, access resources
  - contribute to the strategic OHS performance of the organisation
- attention to detail when making observations and recording outcomes
- numeracy skills to carry out simple arithmetical calculations (e.g. % change) and to produce graphs of workplace information and data, to identify trends and recognise limitations of information and data
- research skills to access relevant OHS information and data to interpret information and data, to identify areas for improvement
- communication skills to:
  - conduct effective formal and informal meetings and to communicate effectively with personnel at all levels of the organisation, OHS specialists and, as required, emergency services personnel
  - write policies, procedures and plans
  - use language and literacy skills appropriate to the workgroup and the task
- data gathering skills such as brainstorming, polling, interviewing
- consultation and negotiation skills to develop plans, and to implement and monitor designated actions
- project management skills to achieve continuous improvement and action processes in OHS matters
- organisational skills to manage own tasks within a timeframe
- information technology skills to access and enter internal and external information and data on OHS and to use a range of media.

Required knowledge

- benefits, limitations and use of a range of communication strategies and tools appropriate to the workplace
- difference between hazard and risk
- ethics related to professional practice
- formal and informal communication and consultation processes, and key personnel related to communication
- how the characteristics and composition of the workforce impact on risk and the

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REQUIRED SKILLS AND KNOWLEDGE
systematic approach to managing OHS, for example: • communication skills • cultural background/workplace diversity • gender • labour market changes • language, literacy and numeracy • structure and organisation of workforce e.g. part-time, casual and contract workers, shift rosters, geographical location • workers with specific needs • internal and external sources of OHS information and data • language, literacy and cultural profile of the work group • legislative requirements for OHS information and data, and consultation • limitations of generic hazard and risk checklists and risk ranking processes • nature of workplace processes (including work flow, planning and control) and hazards relevant to the particular workplace • organisational behaviour and culture as it impacts on OHS and on change • organisational culture as it impacts on the workgroup • organisational OHS policies and procedures • other functional areas that impact on the management of OHS • pertinent sections of relevant Australian and other standards such as AS/NZS 4360: 2004 Risk management, National Standard for the Storage and Handling Workplace Dangerous Goods [NOHSC: 1015(2001)] and National Standard for Manual Handling [NOHSC: 1001 (1990)] • principles and practices of a systematic approach to managing OHS • principles of duty of care including concepts of causation, foreseeability, preventability • principles of human behaviour and response to interactions with human, physical and task environment to identify psychosocial hazards • principles of incident causation and injury processes • range of risk analysis/assessment techniques and tools and their application and limitations • requirements for control of work permits/written authorities in workplace monitoring activities • requirements of OHS and standards related to systematically managing OHS • risk as a measure of uncertainty and the factors that affect risk • roles and responsibilities under OHS legislation of employees including supervisors, contractors, OHS inspectors • roles and responsibilities in relation to communication and consultation for OHS committees, OHS representatives, line management, employees and inspectors • sources of occupational disease and their prevention • standard industry controls for a range of hazards

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REQUIRED SKILLS AND KNOWLEDGE
• state/territory and commonwealth OHS legislation (acts, regulations, codes of practice, associated standards and guidance material) including prescriptive and performance approaches and links to other relevant legislation such as industrial relations, equal employment opportunity, workers compensation, rehabilitation • structure and forms of legislation including regulations, codes of practice, associated standards and guidance material • toxicology of hazardous materials and potential health effects in the workplace • types of hazard identification tools including job system analysis (JSA).

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • OHS risk analysis and evaluation of a number of tasks as part of an OHS risk management process, either in an actual workplace, simulation exercise or scenario • products developed for management of these OHS processes • how these products were developed • use of the products • knowledge of pertinent sections of relevant Australian and other standards.
Context of and specific resources for assessment	Assessment must ensure: • access to actual workplace/s and stakeholder groups • access to office equipment and resources • access to relevant legislation, standards and guidelines • access to workplace documentation • access to reports from other parties consulted in conducting risk analysis and evaluation.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • analysis of responses to case studies and scenarios • demonstration of techniques used to identify, analyse, evaluate, control and monitor risks • direct questioning combined with review of portfolios of evidence and third party reports of on-the-job performance by the candidate • observation of performance in role plays • observation of presentations • oral or written questioning • review information and data communicated to stakeholders about the OHS risk

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EVIDENCE GUIDE	
	• evaluation of ranking of OHS risks • assessment of comparison of outcomes of OHS risk analysis with criteria • review of documentation of process and outcomes of analysis and evaluation of OHS risk of a task or process.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other OHS units

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Hazards may include:	• source or situation with a potential for harm in terms of human injury or ill health, damage to property or the environment, or a combination of these
Context may include:	• activities • controls currently in place • internal and external factors that impact on OHS risk • level of documentation required • stakeholders • workplace
Scope of OHS risk study may include:	• activities, job role, area, location to be analysed • who will use the output and for what purpose • why it is being done
Monitoring activities may include:	• air monitoring • medical monitoring • noise monitoring
Information and data about the OHS risk may include:	• mode/s of action of the hazard causing injury or damage • outcomes of OHS risk analysis
Stakeholders may include:	• customers/users of the product or process • employees and their representatives • managers, including boards of management • the community
Controls may include:	• actions implementing risk management decisions • monitoring • programs or policies • re-evaluation and compliance with decisions
Relevant standards may include:	• Australian and industry standards • codes of practice and guidance material

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RANGE STATEMENT	
	• common law duty of care • current knowledge • current practice • legislation
Comprehensive analysis of information and data may include:	• engineering modelling • experience with enterprise, own/other industries • past records • published literature • research within exposed groups • specialist and expert groups
Comprehensive analysis of techniques may include:	• broad consultation • multidisciplinary focus groups • processes and techniques used by specialists, such as modelling, fault tree and Hazard and Operability Studies (HazOps) • questionnaires • structured interviews
OHS specialist advisors may include:	• engineers • ergonomists • occupational hygienists • safety professionals • occupational health practitioners • psychologists • people skilled in applying advanced risk analysis processes, such as modelling, fault tree, HazOps and Management Oversight and Risk Tree (MORT) • toxicologists
Documentation of risk analysis may include:	• description of methods used • groups involved/consulted • description of consequences and their likelihood • information and data used in estimates • assumptions • effectiveness of existing controls • uncertainty in analysis • factors affecting level of risk • further information/data and/or investigation required

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RANGE STATEMENT	
Documentation of risk evaluation may include:	• criteria determined • descriptions of method used to determine the criteria • groups consulted/involved • list of risks and schedule for action • statement of the legal ramifications of decision making based on risk prioritisation

Unit Sector(s)

Unit sector	

Competency field

Competency field	Regulation, Licensing and Risk - Occupational Health and Safety

Co-requisite units

Co-requisite units		

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BSBPMG404A Apply quality management techniques

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to enhance project outcomes through contributing to quality planning, applying quality policies and procedures and contributing to continuous improvement within projects. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

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Application of the Unit

Application of the unit	This unit applies to a project team member working under the direction of a project manager with other project team members. The individual may be operating within an organisation or as a consultant. The skills should be applied in the context of multiple complex projects, with the individual operating as part of a specialist project management team. In the context of this unit a complex project is defined as a project which involves: • the need for a comprehensive and multi faceted project plan • the need for a formal internal or external communications strategy • a dedicated and diverse project budget • multiple administrative components • multiple operational components • a wide range of stakeholders • a project operations team. The functions performed by a worker managing a straightforward project or a section of a larger project where project management is not the main focus of the job role are covered by BSBPMG510A Manage projects.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Contribute to quality planning	1.1. Contribute to determining quality requirements of project stakeholders 1.2. Contribute to establishing quantifiable quality criteria for project outcomes and objectives 1.3. Source ***information*** to locate and interpret quality policy and procedures 1.4. Contribute to the development of quality requirements in the project plan and processes
2. Apply quality policies and procedures	2.1. Undertake work under ***delegated authority*** to implement ***quality assurance*** within the project in accordance with agreed quality standards and guidelines 2.2. Maintain records and documentation in accordance with set procedures to facilitate ***quality control*** and to provide an audit trail 2.3. Document and evaluate results of project activities and product performance to determine compliance with agreed quality standards 2.4. Report shortfalls in quality outcomes to ***others*** to enable appropriate action to be initiated
3. Contribute to continuous improvement process	3.1. Participate in the ongoing review of project outcomes to determine the effectiveness of quality management activities 3.2. Report quality management issues and responses to others for application in future projects

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• literacy skills to work with quality documents and project records, and to produce records for quality control and auditing purposes • organisational skills and attention to detail to monitor compliance with agreed standards • teamwork and communication skills to communicate quality issues.
Required knowledge
• quality auditing processes and requirements • quality standards and their place in the project life cycle.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • application of quality management and continuous improvement techniques in relation to multiple complex projects • knowledge of quality auditing processes and requirements.
Context of and specific resources for assessment	Assessment must ensure: • access to examples of project management documentation used for quality control purposes • access to project team records.
Method of assessment	A range of assessment methods should be used to assess practical skill and knowledge. The following assessment methods are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • oral or written questioning to assess knowledge of strategies for managing project quality and their application to different situations • analysis of responses to case studies and scenarios which present issues and problems in project quality management • review of records documented and maintained • evaluation of documented results of project activities and product performance • evaluation of reports developed about shortfalls in quality outcomes.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Certificate IV in Project Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Information may include:	• designated standard operating procedures and regulations • organisation and project standards • organisational quality management policy and guidelines as applied to specific requirements of a project • project quality guidelines and instructions
Delegated authority means:	• carried out under limited guidance and supervision • subject to frequent change in a multi-disciplinary environment • within agreed authorisation and limits • within established organisational framework, procedures and routines
Quality assurance may include:	• project finalisation process to capture lessons learned and to enable continuous improvement • systematic review of the project management process to ensure compliance with organisational policy and guidelines
Quality control may include:	• inspections and audits in compliance with guidelines • monitoring conformance with the specification • recommending ways to eliminate causes of unsatisfactory performance of products or processes • regular inspection by the individual or the monitoring of inspections by internal or external agents • reporting of variances
Others may include:	• higher project authority • project manager • project specialists or other personnel • team members

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Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Project Management

Co-requisite units

Co-requisite units		

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BSBPMG407A Apply risk management techniques

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to assist with aspects of risk management within a project. It specifically involves assisting the project team to plan for, control and review risks associated with the project. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

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Application of the Unit

Application of the unit	This unit applies to a project team member working under the direction of a project manager with other project team members. The individual may be operating within an organisation or as a consultant. The skills should be applied in the context of multiple complex projects, with the individual operating as part of a specialist project management team. In the context of this unit a complex project is defined as a project which involves: • the need for a comprehensive and multi faceted project plan • the need for a formal internal or external communications strategy • a dedicated and diverse project budget • multiple administrative components • multiple operational components • a wide range of stakeholders • a project operations team. The functions performed by a worker managing a straightforward project or a section of a larger project where project management is not the main focus of the job role are covered by BSBPMG510A Manage projects.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Assist with risk analysis and planning	1.1. Contribute to identifying and prioritising potential risks throughout the project life cycle 1.2. Provide input, within ***delegated authority***, to develop risk management strategies and risk management plans within established guidelines 1.3. Establish ***risk analysis methods***, ***techniques and tools*** to assist in the analysis of risks 1.4. Ensure reporting mechanisms for risks are planned for and agreed to
2. Conduct risk control activities	2.1. Undertake control activities in accordance with agreed project and risk management plans to achieve project objectives 2.2. Measure progress and act on perceived, potential or actual risks within authority or report to ***others*** for response 2.3. Contribute to the implementation of agreed risk approaches and the amendment of plans to reflect the changing environment 2.4. Identify and report ***opportunities*** for action in the same way as risks
3. Contribute to assessing risk management outcomes	3.1. Contribute to the ongoing ***review*** of project outcomes to determine the effectiveness of risk management activities by accessing project ***records*** and other available information 3.2. Report risk management issues and responses to others for lessons learned or application in future projects

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• planning, organising and analytical skills to assist with risk analysis, risk management planning and review of risk management outcomes • communication and teamwork skills to contribute to collective processes for risk management • initiative and enterprise to think laterally about risks and how they might occur.
Required knowledge
• risk management framework and risk management processes.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • application of risk management techniques in relation to multiple complex projects • knowledge of risk management methods, techniques and tools.
Context of and specific resources for assessment	Assessment must ensure: • access to examples of project management documentation for risk management.
Method of assessment	A range of assessment methods should be used to assess practical skill and knowledge. The following assessment methods are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • analysis of responses addressing case studies and scenarios which present issues and problems in project risk management • oral or written questioning to assess knowledge of strategies for managing project risk and their application to different situations • review of risk analysis methods, techniques and tools • review of risk management plans • evaluation of reporting of risk management issues and responses.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Certificate IV in Project Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Delegated authority means:	• subject to frequent change in a multi-disciplinary environment • under limited guidance and supervision • within agreed authorisation and limits • within established organisational framework, procedures and routines
Risk analysis methods, techniques and tools may include:	• using personal experience and/or subject matter experts • assisting in qualitative and/or quantitative risk analysis, such as schedule simulation, decision analysis, contingency planning and alternative strategy development • using specialist risk analysis tool/s to assist in the decision making process
Others may include:	• higher project authorities • project manager • project specialists or personnel • team members
Opportunities may include:	• better means of achieving a result • changes in the project or broader environment that offer scope for rescheduling activities to better effect • efficiencies or methods to work more effectively, such as ways of shortening an activity • initial project activities that reveal entirely different sets of priorities for example, product development, research and policy development • responses to changing commercial/competitive conditions
Reviews may include evaluations of:	• agreed major milestones, for example phases and sub-contracts • change of key personnel • delivery of major deliverables

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RANGE STATEMENT	
	• finalisation of project and other agreed milestones
Records may include:	• lists of potential risk events (risk register/log) • project and/or organisation files and records • risk analysis and reappraisal • risk diaries, incident logs, occurrence reports and other such documentation • risk management lessons learned • risk management plan

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Project Management

Co-requisite units

Co-requisite units		

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BSBPMG504A Manage project costs

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to identify, analyse and refine project costs to produce a budget, and to use this budget as the principal mechanism to control project cost. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

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Application of the Unit

Application of the unit	This unit applies to an individual who is clearly and solely responsible for the management and leadership of a complex project, either as an employee of an organisation or an external consultant. In the context of this unit a complex project is defined as a project which involves: the need for a comprehensive and multi-faceted project plan the need for a formal internal or external communications strategy a dedicated and diverse project budget multiple administrative components multiple operational components a wide range of stakeholders a project operations team. The functions performed by a program manager to manage costs within multiple projects are addressed in BSBPMG604A Direct cost management of a project program.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine project costs	1.1. Determine resource requirements for individual tasks, with input from stakeholders and guidance of ***others*** 1.2. Estimate ***project costs*** to enable budgets to be developed and implement agreed cost management processes 1.3. Develop and implement a cost management plan, within ***delegated authority***, to ensure clarity of understanding and ongoing management of project finances
2. Monitor and control project costs	2.1. Implement agreed ***financial management processes and procedures*** to monitor actual expenditure and to control costs 2.2. Select and use cost analysis methods and tools to identify cost variations, evaluate options and recommend actions to a higher project authority 2.3. Implement, monitor and modify agreed actions to maintain financial and overall project objectives throughout the project lifecycle
3. Conduct financial completion activities	3.1. Conduct appropriate activities to signify financial completion 3.2. ***Review*** project outcomes using available ***records*** and information to determine the effectiveness of cost management processes and procedures 3.3. Review cost management issues and identify improvements

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• numeracy and budgeting skills to monitor expenditure and manage costs • technology skills to use software for recording expenditure and reporting on finances • analytical skills to evaluate processes and recommend improvements.
Required knowledge
• budgeting processes, tools and techniques • methods and tools for costing and cost analysis.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • demonstrated evidence of monitoring project costs across the project life cycle for multiple complex projects • knowledge of budgeting processes, tools and techniques.
Context of and specific resources for assessment	Assessment must ensure: • access to workplace documentation including budgets, financial documents • consideration of feedback from project stakeholders on how costs were managed.
Method of assessment	A range of assessment methods should be used to assess practical skill and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • oral or written questioning to assess knowledge of strategies for managing project costs and their application to different situations. • analysis of responses addressing case studies and scenarios which present project cost management issues and problems • review of developed and implemented cost management plan • review of documentation about project outcomes, cost management issues and identified improvements.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Diploma of Project Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Others may include:	• relevant project authority • program manager • project specialists or other personnel • team members
Project costs are estimated to a level of accuracy available considering:	• availability of information at the time • contingencies to allow for identified risks and uncertainty • organisational requirements, for example overhead and profit margin • stage of the project life cycle
Delegated authority means that activities will:	• be conducted routinely or as changing circumstances dictate • be done independently within broad guidance or by taking the lead of a team • involve consultation with other project members, teams and internal stakeholders • involve the selection, use and supervision of appropriate time management methods, tools and techniques • take into account internal organisational change and external environmental change
Financial management processes and procedures may include:	• approval processes • communication and reporting processes • financial authorisations/delegations • invoice procedures
Reviewing may include evaluations of:	• agreed major milestones, for example phases and sub-contracts • change of key personnel • delivery of major deliverables • finalisation of project and other agreed milestones
Records may include:	• budgets, commitment and expenditure • cost management lessons learned

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RANGE STATEMENT	
	• cost management plans • invoice and payment summaries • lists of potential costs • project and/or organisation files and records • recommended and approved courses of action • reports to relevant stakeholders

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Project Management

Co-requisite units

Co-requisite units		

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BSBPMG505A Manage project quality

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to manage quality within projects. It covers determining quality requirements, implementing quality assurance processes, and using review and evaluation to make quality improvements in current and future projects. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to an individual who is clearly and solely responsible for the management and leadership of a complex project, either as an employee of an organisation or an external consultant. In the context of this unit a complex project is defined as a project which involves: • the need for a comprehensive and multi faceted project plan • the need for a formal internal or external communications strategy • a dedicated and diverse project budget • multiple administrative components • multiple operational components • a wide range of stakeholders • a project operations team. The functions performed by a program manager to manage quality within multiple projects are addressed in BSBPMG605A Direct quality management of a project program.

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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine quality requirements	1.1. Determine ***quality objectives***, standards and levels, with input from stakeholders and guidance of a higher project authority, to establish the basis for quality outcomes and ***a quality management plan*** 1.2. Select and use established ***quality management methods***, ***techniques and tools*** to determine preferred mix of quality, capability, cost and time 1.3. Identify quality criteria, obtain agreement from a higher project authority and communicate to stakeholders, to ensure clarity of understanding and achievement of quality and overall project objectives 1.4. Include agreed quality requirements in the project plan and implement as basis for performance measurement
2. Implement quality assurance processes	2.1. Measure and document results of project activities and product performance throughout the project life cycle to determine compliance with agreed quality standards 2.2. Identify causes of unsatisfactory results, in consultation with client, and recommend appropriate actions to a higher project authority to enable continuous improvement in quality outcomes 2.3. Conduct inspections of quality processes and ***quality control*** results to determine compliance of quality standards to overall quality objectives 2.4. Maintain a quality management system to enable effective recording and communication of quality issues and outcomes to a higher project authority and stakeholders
3. Implement project quality improvements	3.1. Review processes and implement agreed changes continually throughout the project life cycle to ensure continuous quality improvement 3.2. Review project outcomes against performance criteria to determine the effectiveness of quality management processes and procedures 3.3. Identify and document lessons learned and recommended ***improvements***, and pass on to higher project authority for application in future projects

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• literacy skills to develop quality objectives and criteria • communication and leadership skills to motivate staff, convey expectations and ensure outcomes are met • analytical skills to monitor achievement of project outcomes against quality criteria • coaching and mentoring skills to boost performance.
Required knowledge

• quality management theory, techniques, tools and methodologies
• roles and responsibilities in project management
• methods for managing and improving performance
• relevant legislation codes and national standards:
  • award and enterprise agreements and industrial instruments
  • industry codes of practice
  • legislation from all levels of government that affects business operation, especially in regard to occupational health and safety and environmental issues, equal opportunity, industrial relations and anti-discrimination.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • demonstrated evidence of successfully managing project staff so that quality outcomes were achieved on multiple complex projects • knowledge of a range of quality management tools, techniques and methodologies.
Context of and specific resources for assessment	Assessment must ensure: • access to project documentation which includes quality criteria and evidence of quality monitoring and improvement practices • consideration of feedback from project stakeholders regarding project quality management.
Method of assessment	This unit applies to an individual who is clearly and solely responsible for the management and leadership of a complex project, either as an employee of an organisation or an external consultant. • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • oral or written questioning to assess knowledge of strategies for managing project quality and their application to different situations • analysis of candidate responses in addressing case studies and scenarios which present project quality management issues and problems • review of project plan quality requirements • review of implementation of agreed changes • evaluation of review of project outcomes against performance criteria.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Diploma of Project Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Quality objectives may include:	• negotiated trade-offs between cost, schedule and performance • requirements from a higher project authority • requirements from the client and other stakeholders • those quality aspects which may impact on customer satisfaction
Quality management plan may include:	• authorisations and responsibilities for quality control • continuous improvement • established processes • quality assurance
Quality management methods, techniques and tools may include:	• benchmarking • brainstorming • charting processes • control charts • defining control • flowcharts • group work activities • histograms • pareto charts • processes that limit and/or indicate variation • ranking candidates • run charts • scattergrams • undertaking benefit/cost analysis
Quality control may include:	• monitoring conformance with specifications • monitoring of regular inspections by internal or external agents • recommending ways to eliminate causes of unsatisfactory performance of products or processes

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RANGE STATEMENT	
Improvements may include:	• formal practices, such as total quality management or continuous improvement • improvement by less formal processes that enhance both the product quality and processes of the project, for example client surveys to determine client satisfaction with project team performance

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Project Management

Co-requisite units

Co-requisite units		

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BSBPMG507A Manage project communications

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to link people, ideas and information at all stages in the project life cycle. Project communications management ensures the timely and appropriate generation, collection, dissemination, storage and disposal of project information through formal structures and processes. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

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Application of the Unit

Application of the unit	This unit applies to an individual who is clearly and solely responsible for the management and leadership of a complex project, either as an employee of an organisation or an external consultant. In the context of this unit a complex project is defined as a project which involves: • the need for a comprehensive and multi faceted project plan • the need for a formal internal or external communications strategy • a dedicated and diverse project budget • multiple administrative components • multiple operational components • a wide range of stakeholders • a project operations team. The functions performed by a program manager to manage communications within multiple projects are addressed in BSBPMG607A Direct communications management of a project program.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan communications processes	1.1. Identify, document and analyse information requirements, with input from stakeholders and guidance from a higher project authority, as the basis for communications planning 1.2. Develop, within ***delegated authority***, an agreed communications management plan to ensure clarity of understanding and achievement of project objectives throughout the project life cycle 1.3. Establish and maintain designated ***project management information system*** (***PMIS***) to ensure the quality, validity, timeliness and integrity of information and communication
2. Manage project information	2.1. Manage the generation, gathering, storage, retrieval, analysis and dissemination of information by project staff and stakeholders within established systems and procedures to aid decision making processes throughout the project life cycle 2.2. Implement, modify, monitor and control designated information validation processes to optimise quality and accuracy of data 2.3. Implement and maintain agreed ***communication networks*** between project staff, client and other stakeholders to ensure effective communications at appropriate levels throughout the project life cycle 2.4. Identify communication and information management system problems and report them to a higher project authority
3. Assess communications management outcomes	3.1. Conduct finalisation activities to ensure agreed ownership of, and responsibility for, information collected 3.2. Review project outcomes to determine the effectiveness of management information and communications processes and procedures 3.3. Identify and document lessons learned and recommended improvements, and pass on to higher project authority for application in future projects

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• literacy skills to write reports and communicate key issues • technology skills to facilitate effective communication • organisational skills to manage information • analytical skills to review project outcomes.
Required knowledge
• project life cycle and the place of communications within it • project management information systems and their various applications.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • development and implementation of a range of project communications that facilitate effective outcomes for multiple complex projects • knowledge of the place of communications within the project life cycle.
Context of and specific resources for assessment	Assessment must ensure: • access to project communication documentation • consideration of feedback from project team members and other stakeholders as to how effectively communication was managed.
Method of assessment	A range of assessment methods should be used to assess practical skill and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • oral or written questioning to assess knowledge of strategies for managing project communications and their application to different situations • analysis of responses in addressing case studies and scenarios which present project communication management issues and problems • observation of performance in role plays which demonstrate communication skills • evaluation of communications management plan • review of identification and reporting of communication and information management system problems.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Diploma of Project Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Delegated authority means that activities may:	• be conducted routinely or as changing circumstances dictate • be done independently within broad guidance or by taking the lead of a team • involve consultation with other project members, teams and internal stakeholders • involve the selection, use and supervision of appropriate communications management methods and tools • take into account internal organisational change and external environmental change
Project management information system is a means for communicating knowledge about the project and provides a systematic approach to the storing, searching and retrieval of information relevant to the project and may include:	• complex computer-based systems • modified systems to cater for unique project requirements • simple manual systems
Communication networks may include:	• client organisation and end users • formal networks • informal networks • organisation's communication networks • specific networks

Unit Sector(s)

Unit sector	

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Competency field

Competency field	Management and Leadership - Project Management

Co-requisite units

Co-requisite units		

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BSBPMG508A Manage project risk

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to manage risk within a project to avoid adverse effects on project outcomes. It covers determining, monitoring and controlling project risks, and assessing risk management outcomes. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to an individual who is clearly and solely responsible for the management and leadership of a complex project, either as an employee of an organisation or an external consultant. In the context of this unit a complex project is defined as a project which involves: • the need for a comprehensive and multi faceted project plan • the need for a formal internal or external communications strategy • a dedicated and diverse project budget • multiple administrative components • multiple operational components • a wide range of stakeholders • a project operations team. The functions performed by a program manager to manage risk within multiple projects are addressed in BSBPMG608A Direct risk management of a project program.

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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine project risks	1.1. Identify, document and analyse ***risks***, in consultation with stakeholders and higher project authority, as the basis for risk planning 1.2. Use established ***risk management techniques and tools***, within ***delegated authority***, to analyse risks, assess options and recommend preferred risk approaches 1.3. Develop risk management plans, secure agreement of stakeholders and communicate plans to ensure clarity of understanding and ongoing management of risk factors 1.4. Establish designated ***risk management processes and procedures*** to enable effective management and communication of risk events, responses and results
2. Monitor and control project risks	2.1. Manage project in accordance with established project and risk management plans to ensure a common approach to the achievement of objectives 2.2. Monitor progress against project plans to identify variances and ***recommend responses*** to a higher project authority for remedial action 2.3. Implement agreed risk responses and modify plans to reflect changing project objectives in an environment of uncertainty
3. Assess risk management outcomes	3.1. Review project outcomes to determine effectiveness of risk management processes and procedures 3.2. Identify and document risk issues and recommended improvements, and pass on to higher project authority for application in future projects

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• literacy skills to write risk management plans • problem-solving skills to control risks • lateral thinking skills to identify risks • planning and organisational skills to monitor project progress • analytical skills to review project outcomes in terms of risk management.
Required knowledge
• risk management framework • risk management techniques, tools and approaches.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • demonstrated evidence of effective risk management for multiple complex projects • knowledge of risk management techniques, strategies and tools.
Context of and specific resources for assessment	Assessment must ensure: • access to workplace risk management documentation • consideration of feedback from project stakeholders as to how risks were managed.
Method of assessment	A range of assessment methods should be used to assess practical skill and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • oral or written questioning to assess knowledge of the risk management framework • analysis of responses in addressing case studies and scenarios which present project scope management issues and problems • review of risk management plans • evaluation of monitoring of progress against project plans • assessment of identified and documented risk issues and recommended improvements.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units in the Diploma of Project Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Risks may be:	• actual • likely/probable • perceived • potential
Risk management techniques and tools may include:	• calling upon personal experience and/or subject matter experts • conducting or supervising qualitative and/or quantitative risk analysis, such as schedule simulation, decision analysis, contingency planning and alternative strategy development • using specialist risk analysis tools to assist in the decision making process
Delegated authority refers to planning and activities that may:	• be conducted routinely or as changing circumstances dictate • be done independently within broad guidance or by taking the lead of a team • involve consultation with other project members, teams and internal stakeholders • involve the selection, use and supervision of appropriate risk management methods, tools and techniques
Risk management processes and procedures may include:	• communication with stakeholders, dispute resolution and modification procedures • implementation of risk control trigger mechanisms • measurement of actual progress against planned milestones • recording and reporting of major variance • setting key milestones at significant points during the project and at completion
Recommended responses to variations may be made:	• in consultation with project team members, section heads, project manager and stakeholders • independently or with higher project authority

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RANGE STATEMENT	
	endorsement if necessary • regularly throughout the project life cycle • taking into account internal organisational change and external environmental change

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Project Management

Co-requisite units

Co-requisite units		

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BSBPMG510A Manage projects

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to manage a straightforward project or a section of a larger project. This unit addresses the management of projects including the development of a project plan, administering and monitoring the project, finalising the project and reviewing the project to identify lessons learnt for application to future projects. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	The unit focuses on the application of project management skills and the requirement to meet time lines, quality standards, budgetary limits and other requirements set for the project. The unit does not apply to specialist project managers. For specialist project managers, the units of competency in the Project Management competency field will be applicable.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Define project	1.1. Access ***project scope and other relevant documentation*** 1.2. Define project ***stakeholders*** 1.3. Seek clarification from ***delegating authority*** of any issues related to project and ***project parameters*** 1.4. Identify limits of own responsibility and reporting requirements 1.5. Clarify relationship of project to other projects and to the organisation's objectives 1.6. Determine and access available resources to undertake project
2. Develop project plan	2.1. Develop ***project plan*** including timelines, work breakdown structure, role and responsibilities and other details of how the project will be managed in relation to the project parameters 2.2. Identify and access appropriate ***project management tools*** 2.3. Formulate risk management plan for project, including occupational health and safety (OHS) 2.4. Develop and approve project budget 2.5. Consult team members and take their views into account in planning the project 2.6. Finalise project plan and gain any necessary approvals to commence project according to documented plan
3. Administer and monitor project	3.1. Take action to ensure project team members are clear about their responsibilities and the project requirements 3.2. Provide ***support for project team members***, especially with regard to specific needs, to ensure that the quality of the expected outcomes of the project and documented time lines are met 3.3. Establish and maintain ***required record keeping systems*** throughout the project 3.4. Implement and monitor plans for managing project finances, resources (human, physical and technical) and quality 3.5. Complete and forward project reports as required to stakeholders 3.6. Undertake ***risk management*** as required to ensure

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ELEMENT	PERFORMANCE CRITERIA
	project outcomes are met 3.7. Achieve project deliverables
4. Finalise project	4.1. Complete financial record keeping associated with project and check for accuracy 4.2. Assign staff involved in project to new roles or reassign to previous roles 4.3. Complete project documentation and obtain any ***necessary sign offs*** for concluding project
5. Review project	5.1. Review project outcomes and processes against the project scope and plan 5.2. Involve team members in the project review 5.3. Document lessons learnt from the project and report within the organisation

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- communication and negotiation skills to work with team members and other stakeholders to maintain project schedules
- literacy skills to read, write and review a range of documentation
- planning and organising skills to develop, monitor and maintain implementation schedules
- numeracy skills to analyse data, and to compare time lines and promotional costs against budgets
- culturally appropriate communication skills to relate to people from diverse backgrounds and people with diverse abilities.

Required knowledge

- relevant legislation from all levels of government that may affect aspects of business operations, such as:
  - anti-discrimination legislation
  - ethical principles
  - codes of practice
  - privacy laws
  - environmental issues
  - OHS
- organisational structure, and lines of authority and communication within the organisation
- how the project relates to organisation's overall mission, goals, objectives and operations.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • development of a project plan • details of monitoring arrangement/s and evaluation of the project plan's efficacy to address time lines and budgets of project • knowledge of relevant legislation.
Context of and specific resources for assessment	Assessment must ensure: • access to workplace project documentation.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • observation of presentations • oral or written questioning to assess knowledge of how the project relates to the organisation's overall mission, goals, objectives and operations • review of project risk management plan and project plan • evaluation of project reports forwarded to stakeholders • analysis of documentation reviewing project outcomes and processes against the project scope and plan • evaluation of documentation outlining lessons learnt from the project.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other project management units.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Project scope and other relevant documentation may include:	• contract or other agreement • project brief • project plan or summary • other documents outlining expected outcomes of the project, inclusions and exclusions from project, timeframes for project, quality standards for project, project resources
Stakeholders may include:	• clients or customers (internal and external) • funding bodies • management, employees and relevant key personnel (internal and external) with special responsibilities • project sponsor
Delegating authority may include:	• customer or client • funding body • manager or management representative • project sponsor
Project parameters may include:	• finances for project • integration of project within organisation • legislative and quality standards • physical, human and technical resources available or required for project • procurement requirements associated with project • reporting requirements • risks associated with project, including OHS • scope of project • time lines
Project management tools may include:	• cost schedule control system • Critical Path Method • Gantt and bar charts • life cycle cost analysis • logistics support analysis

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RANGE STATEMENT	
	• PERT charts • project management software • spreadsheets • technical resources required for the project, for example OHS management system tools
Support for project team members may include:	• additional physical, human and technical resources (within allocated budget) if and as required • encouragement • feedback • learning and development • regular project team meetings • supervision, mentoring and coaching
Required record keeping systems may include systems for:	• correspondence • financial data including costs, expenditure, income generated, purchases • project outcomes • quality data including any test results • recording of time spent on project and progress in completing project • samples, prototypes, models
Risk management may include:	• changing roles and responsibilities within project team • negotiating an extension of deadline, or redefining completion or quantities or quality of outcomes • outsourcing some aspects of the project • reducing costs • researching and applying more efficient methods for completing project tasks • seeking further resources to meet deadline • sharing of ideas to gain improvements to work undertaken within the project
Necessary sign offs may be required by:	• clients, customers • funding body • management • project sponsor

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Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Management

Co-requisite units

Co-requisite units		

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BSBRES401A Analyse and present research information

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to gather, organise and present workplace information using available systems. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals who are required to apply their broad knowledge of the work environment to analysis and research tasks. They may have responsibility to provide guidance or to delegate aspects of these tasks to others.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Gather and organise information	1.1. Gather and organise ***information*** in a format suitable for analysis, interpretation and dissemination in accordance with ***organisational requirements*** 1.2. Access information held by the organisation ensuring accuracy and relevance in line with established organisational requirements 1.3. Ensure that ***methods of collecting information*** are reliable and make efficient use of resources in accordance with organisational requirements 1.4. Identify research requirements for combining online research with non-electronic sources of information 1.5. Use ***business technology*** to access, organise and monitor information in accordance with organisational requirements 1.6. Update, modify, maintain and store information, in accordance with organisational requirements
2. Research and analyse information	2.1. Clearly define ***objectives of research*** ensuring consistency with organisational requirements 2.2. Ensure that data and ***research strategies*** used are valid and relevant to the requirements of the research and make efficient use of available resources 2.3. Identify ***key words and phrases*** for use as part of any online search strategy, including the use of ***Boolean operators*** and other search tools 2.4. Use reliable ***methods of data analysis*** that are suitable to research purposes 2.5. Ensure that assumptions and conclusions used in analyses are clear, justified, supported by evidence and consistent with research and ***business objectives***
3. Present information	3.1. Present recommendations and issues in an appropriate format, style and structure using suitable business technology 3.2. Structure and format reports in a clear manner that conforms to organisational requirements 3.3. Report and distribute research findings in accordance with organisational requirements 3.4. Obtain ***feedback*** and comments on suitability and sufficiency of findings in accordance with organisational requirements

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- literacy skills to read, write and understand a variety of texts; and to edit and proofread documents to ensure clarity of meaning, accuracy and consistency of information
- problem-solving skills to deal with information which is contradictory, ambiguous, inconsistent or inadequate
- technology skills to select and use technology appropriate to a task
- research skills to identify and access information.

Required knowledge

- key provisions of relevant legislation from all levels of government that may affect aspects of business operations, such as:
  - anti-discrimination legislation
  - ethical principles
  - codes of practice
  - privacy laws
  - occupational health and safety (OHS)
- organisational record keeping/filing systems, security procedures and safe recording practices
- organisational policies and procedures relating to distribution of workplace information, and legal and ethical obligations
- research processes and strategies to identify new sources (online and print) of information and to use them most efficiently and effectively.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • presenting information and data • maintaining and handling data and documents systematically • analysing and interpreting data to support organisational activities • knowledge of research processes and strategies to identify new sources of information.
Context of and specific resources for assessment	Assessment must ensure: • access to an actual workplace or simulated environment • access to office equipment and resources • examples of research tasks and resources.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • analysis of responses to case studies and scenarios • demonstration of techniques • observation of presentations • review of documentation outlining recommendations and issues • review of reports outlining research findings.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • general administration units • IT use units • Governance units

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Information may include:	• demographic data • service delivery records • computer databases (library catalogue, customer records, subscription database, internet) • computer files (letters, memos and other documents) • correspondence (faxes, memos, letters, email) • financial figures • forms (insurance forms, membership forms) • information on training needs • invoices (from suppliers, to debtors) • marketing reports/plans/budgets • personnel records (personal details, salary rates) • production targets • sales records (monthly forecasts, targets achieved)
Organisational requirements may include:	• anti-discrimination and related policy • business and performance plans • Code of Conduct/Code of Ethics • defined resource parameters • ethical standards • goals, objectives, plans, systems and processes • information protocols • legal and organisational policies, guidelines and requirements • management and accountability channels • OHS policies, procedures and programs • procedures for updating records • quality assurance and/or procedures manuals • security and confidentiality requirements
Methods of collecting	• checking research provided by others

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RANGE STATEMENT	
information may include:	• checking written material including referrals and client files • individual research • information from other organisations • interviews with community members, colleagues/customers • observation and listening • previous file records • questioning (in person or indirect) • recruitment applications and other forms
Business technology may include:	• answering machine • computer • fax machine • photocopier • telephone
Objectives of research may include:	• comparative analysis • hypothesis testing • identification of trends • industry pricing policies • process mapping • situational diagnosis
Research strategies may include:	• data analysis • documentation reviews • focus groups • interviewing colleagues and clients • online searching • product sampling • subscription databases
Key words and phrases may include:	• American spellings when searching online • cultural or geographic terms • using different thesauri in different databases
Boolean operators may include:	• exclude - / NOT • include +/ AND • or • phrase searching " "/( ) • variations, depending on the resource being used
Methods of data analysis may include:	• data sampling • feedback on results • peer review

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RANGE STATEMENT	
	• review of previous research • statistical analysis
Business objectives may include:	• community capacity building • community development • service provision • business planning • financial performance • flexibility, responsiveness • interpersonal communication • marketing and customer service • organisational values and behaviours • people management • work procedures and quality assurance manuals
Feedback may include:	• audit documentation and reports • comments from community, board members, clients and colleagues • customer satisfaction questionnaires • quality assurance data • returned goods

Unit Sector(s)

Unit sector	

Competency field

Competency field	Knowledge Management - Research

Co-requisite units

Co-requisite units		

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Co-requisite units		

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BSBRSK501B Manage risk

Modification History

Release	Comments
Release 1	This version first released with *BSB07 Business Training Package version 6.0*. Revised unit. Required knowledge updated to incorporate current Australian Standards. Replaces BSBRSK501A Manage risk

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to manage risks in a range of contexts across the organisation or for a specific business unit or area.

Application of the Unit

This unit addresses the management of the risk across the organisation or within a business unit or area. It does not assume any given industry setting.
This unit applies to individuals who are working in positions of authority and are approved to implement change across the organisation, business unit, program or project area. They may or may not have responsibility for directly supervising others.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Element	Performance Criteria
Elements describe the essential outcomes of a unit of competency.	*Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.*

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Elements and Performance Criteria

1. Establish risk context	1.1 Review organisational processes, procedures and requirements for undertaking ***risk*** management 1.2 Determine ***scope*** for risk management process 1.3 Identify internal and external stakeholders and their issues 1.4 Review political, economic, social, legal, technological and policy context 1.5 Review strengths and weaknesses of existing arrangements 1.6 Document critical success factors, goals or objectives for area included in scope 1.7 Obtain support for risk management activities 1.8 Communicate with ***relevant parties*** about the risk management process and invite participation
2. Identify risks	2.1 Invite relevant parties to assist in the identification of risks 2.2 ***Research*** risks that may apply to scope 2.3 Use ***tools and techniques*** to generate a list of risks that apply to the scope, in consultation with relevant parties
3. Analyse risks	3.1 Assess ***likelihood*** of risks occurring 3.2 Assess ***impact or consequence*** if risks occur 3.3 ***Evaluate*** and prioritise risks for treatment
4. Select and implement treatments	4.1 Determine and select most appropriate ***options*** for treating risks 4.2 Develop an ***action plan*** for implementing risk treatment 4.3 Communicate risk management processes to relevant parties 4.4 Ensure all documentation is in order and appropriately stored 4.5 Implement and monitor action plan 4.6 Evaluate risk management process

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication and literacy skills to consult and negotiate, to prepare communications about risk management, and to encourage stakeholder involvement
- organisational and management skills to plan and implement risk management processes
- problem-solving and innovation skills to find practical ways to manage identified risks.

Required knowledge

- AS/NZS ISO 31000:2009 Risk Management - Principles and Guidelines
- legislation, codes of practice and national standards, for example:
  - duty of care
  - company law
  - contract law
  - environmental law
  - freedom of information
  - industrial relations law
  - privacy and confidentiality
  - legislation relevant to organisation's operations
  - legislation relevant to operation as a business entity
- organisational policies and procedures, including:
  - risk management strategy
  - policies and procedures for risk management
- overall operations of organisation
- reasonable adjustment in the workplace for people with a disability
- types of available insurance and insurance providers.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • risk management plan which includes a detailed stakeholder analysis, explanation of the risk context, critical success factors, identified and analysed risks, and treatments for prioritised risks • details of monitoring arrangements for risk management plan and an evaluation of the risk management plan's efficacy in treating risks • knowledge of relevant legislation, codes of practice and national standards.
Context of and specific resources for assessment	Assessment must ensure: • access to workplace documentation.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • observation of presentations • oral or written questioning to assess knowledge of risk management policies and procedures • review of documented critical success factors, and goals or objectives for area • review of risks prioritised for treatment • evaluation of action plan for implementing risk treatment • evaluation of documentation communicating risk management processes to relevant parties.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • financial management units, governance units, human resource management units, or technology units.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Risks may include those relating to:	• commercial relationships • economic circumstances and scenarios • human behaviour • individual activities • legislation • management activities and controls • natural events • political circumstances • technology.

Scope may apply to:	• given project
	• specific business unit or area
	• specific functional such as:
	  • financial management
	  • OHS
	  • governance
	• external environment
	• internal environment
	• whole organisation.

Relevant parties may include:	• all staff • internal and external stakeholders • senior management • specific teams or business units • technical experts.
Research may include:	• data or statistical information • information from other business areas • lessons learned from other projects or activities • market research • previous experience • public consultation • review of literature and other information sources.
Tools and techniques may include:	• brainstorms • checklists • fishbone diagrams

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	• flowcharts • scenario analysis.

Likelihood may refer to:	• probability of a given risk occurring, such as:
	  • very likely
	  • likely
	  • possible
	  • unlikely
	  • rare.

Impact or consequence may refer to:	• significance of outcomes if the risk occurs, such as:
	  • disastrous
	  • severe
	  • moderate impact
	  • minimal impact.

Evaluation of risks includes:	• considering the likelihood of the risk occurring • considering the impact of the risk • determining which risks are most significant and are therefore priorities for treatment.
Options may include:	• avoiding the risk • changing the consequences • changing the likelihood • retaining the risk • sharing the risk with a third party.
Action plans should include:	• what actions are required • who is taking responsibility • time lines • monitoring processes.

Unit Sector(s)

Management and Leadership – Management

Custom Content Section

Not applicable.

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BSBSLS403A Present a sales solution

Modification History

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to present a sales solution which responds to the specific buying needs of the client.
No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.
This unit describes the performance outcomes, skills and knowledge required to present a sales solution which responds to the specific buying needs of the client.
No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

This unit applies to individuals who are skilled in using specific sales techniques to present a sales solution to meet buyer needs. They may provide advice and support about aspects of sales solutions to support a sales team.
This unit applies to individuals who are skilled in using specific sales techniques to present a sales solution to meet buyer needs. They may provide advice and support about aspects of sales solutions to support a sales team.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Employability Skills Information

This unit contains employability skills.
This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.
Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
Elements describe the essential outcomes of a unit of competency.
Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

Elements and Performance Criteria

Element	Performance Criteria
1 Prepare for presentation	1.1 Obtain and organise **products** for use within a sales presentation
	1.2 Review product information to ensure familiarity with products
	1.3 Identify sales tactic options, and assess and choose them in terms of their ability to meet the needs and preferences of the prospect
	1.4 Consider a variety of sales solutions and prepare to meet buyer needs
	1.5 Identify and select **sales aids**
	1.6 Identify alternatives for prospects and assess them in relation to anticipated buyer needs
2 Present a sales solution	2.1 Use gestures, posture, body language, facial expressions and voice to create a supportive selling environment
	2.2 Apply listening skills to determine buyer needs
	2.3 Use open-ended questions to identify buyer needs, preferences, motives and objections
	2.4 Adjust presentation to match the needs and preferences of the buyer

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	2.5	Use persuasive communication techniques to secure buyer interest
	2.6	Demonstrate and explain products to enhance buyer retention
	2.7	Ensure the presentation communicates the key features of the product and emphasises benefits in relation to identified buyer needs
	2.8	Obtain and present **proof of benefits** through product purchase
	2.9	Utilise sales aids to build buyer understanding of how the product is aligned with needs
3 Manage buyer resistance	3.1	Utilise probing to identify the source of **buyer resistance**
	3.2	Identify the strengths and limitations of **buyer resistance strategies**
	3.3	Elect and implement a strategy for managing buyer resistance
	3.4	Ensure strategy selected addresses the source of buyer resistance

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

communication skills to question clients to determine client needs and preferences and to use persuasive and assertive language in promoting product features and benefits

conflict resolution skills to manage customer dissatisfaction

negotiation skills to manage buyer resistance

presentation skills to demonstrate how product benefits and key features fulfil buyers' needs

research skills to use sales statistics to support a verbal argument

technological skills to use equipment to aid presentation of sales information.

Required knowledge

detailed product knowledge, including product:

advantages and disadvantages

features

service benefits

materials and aids which can be used to support presentations

principles of achieving an effective sales presentation mix

identification and overview knowledge of key provisions of relevant legislation from all levels of government that affects business operations, codes of practice and national standards, such as:

anti-discrimination

ethical principles

consumer protection

contract law

privacy laws

Trade Practices Act

statistical methods to demonstrate sales performance.

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Evidence Guide

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The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: presentation of sales solutions that respond to specific buying needs and highlight major features of product/s principles of achieving an effective sales presentation mix.
Context of and specific resources for assessment	Assessment must ensure: access to an actual workplace or simulated environment access to product information access to office equipment, machines and sales support materials to make a presentation.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: analysis of responses to case studies and scenarios observations of presentations of sales solutions direct questioning combined with portfolios of evidence and third party workplace reports of on-the-job performance by the candidate oral or written questioning to assess knowledge of sales tactic options, proposed sales solutions and ways to overcome buyer resistance observation of persuasive communication techniques and listening skills used when presenting a sales solution review of sales aids identified and selected evaluation of strategies implemented to manage buyer resistance.

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Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: BSBPRO401A Develop product knowledge BSBSLS404A Secure prospect commitment BSBSLS406A Self-manage sales performance.

Range Statement

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The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Products may include:	goods ideas services
Sales aids may include:	drawings electronic media graphs models photographs printed materials product itself product samples transparencies whiteboards
Proof of benefits may include:	anecdotes and examples comparisons statistics testimony
Source of **buyer resistance** may include:	company resistance no perceived need price resistance salesperson resistance service dissatisfaction timing issues uncertainty about the product
Buyer resistance strategies may include:	assertive messages boomerang checking perceptions

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direct denial

incentives offer

indirect denial

requesting additional information from buyers

open and closed questions

superior benefit

trial offer

Unit Sector(s)

empty
empt

Competency field

Business Development - Sales
Business Development - Sales

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BSBSLS404A Secure prospect commitment

Modification History

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to use sales processes associated with securing prospect commitment to proceed with a sale.
No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.
This unit describes the performance outcomes, skills and knowledge required to use sales processes associated with securing prospect commitment to proceed with a sale.
No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

This unit applies to individuals in a sales related position in a small, medium or large enterprise across a wide variety of industries who secure a prospects commitment to purchase a product or service. They may contribute to securing prospect commitment individually or as a supporting member of a larger sales team.
This unit applies to individuals in a sales related position in a small, medium or large enterprise across a wide variety of industries who secure a prospects commitment to purchase a product or service. They may contribute to securing prospect commitment individually or as a supporting member of a larger sales team.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Employability Skills Information

This unit contains employability skills.
This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.
Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
Elements describe the essential outcomes of a unit of competency.
Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

Elements and Performance Criteria

Element	Performance Criteria
1 Respond to buying signals	1.1 Identify **verbal** and **non-verbal buying signals**
	1.2 Assess verbal and non-verbal buying signals
	1.3 Make a decision as to whether to respond to a buying signal by initiating close of sale
	1.4 Utilise **trial closes** to assist the buyer to make decisions on minor points related to the **product**
	1.5 Use trial closes strategically during different stages of the sales process
2 Negotiate the sale	2.1 Initiate a **formal close** to the sales process following one or more trial closes
	2.2 Negotiate **conditions** of the agreement
	2.3 Assess a range of different strategies to close the sale
	2.4 Select a strategy to close the sale
	2.5 Utilise supportive and confirming language to support the closure of the sales process
	2.6 Describe and demonstrate options for simple sales transactions to match specified situations
	2.7 Respond to the prospect's decision to purchase in

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		an assertive manner
3 Finalise the agreement	3.1	Outline a summary of the agreement to the buyer
	3.2	Confirm the buyer's decision
	3.3	Ensure process and completion of the sales transaction comply with organisational requirements
	3.4	Prepare and complete sales documents
	3.5	Ensure advice on financing arrangements is accurate, matches the buyer's financial situation, and complies with organisational requirements
	3.6	Identify and present cross selling opportunities to the buyer
	3.7	Express a desire to continue the sales relationship and conduct future sales transactions

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

conflict resolution skills to mange client dissatisfaction and criticism

customer service skills to determine client needs and preferences

interpersonal skills to develop rapport and build relationships with clients

literacy and numeracy skills to prepare sales documentation, process sales transactions and calculate financing arrangements.

Required knowledge

detailed product knowledge, including product:

advantages and disadvantages

features

service benefits

identification and overview knowledge of key provisions of relevant legislation from all levels of government that affects business operations, codes of practice and national standards, such as:

anti-discrimination

ethical principles

consumer protection

contract law

privacy laws

Trade Practices Act

principles of sales closure techniques.

Evidence Guide

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The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: sales situations where the candidate clearly identifies and appropriately responds to buying signals before trialling closes, negotiating sale conditions and securing the sale knowledge of principles of sales closure techniques.
Context of and specific resources for assessment	Assessment must ensure: access to an actual workplace or simulated environment access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: analysis of responses to case studies and scenarios observations of interactions with prospects when securing commitment direct questioning combined with portfolios of evidence and third party workplace reports of on-the-job performance by the candidate oral or written questioning to assess knowledge of verbal and non-verbal buying signals, trial closes, proposed sales solutions and ways to overcome buyer resistance observation of strategies used to secure a sale review of cross selling opportunities presented to the buyer review of completed sales documents assessment of advice provided on financing arrangements.

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Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: BSBPRO401A Develop product knowledge BSBSLS403A Present a sales solution BSBSLS406A Self-manage sales performance.

Range Statement

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The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Verbal buying signals may include:	confirmations questions statement of requirement by prospect
Non-verbal buying signals may include:	close examination of the product by the prospect moving closer to where a product is to be installed smiling and nodding
Trial closes may include:	question or paraphrase that focuses the interaction on a minor point related to sale of the product that might lead to closing the sale
Products may include:	goods ideas services
Formal close may include:	inducement narrative close request by the salesperson to the prospect to agree to purchase the product/service offering alternative choices summary of product benefits
Conditions may include:	client loyalty delivery length of contract payment options price

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Unit Sector(s)

empty
empt

Competency field

Business Development - Sales
Business Development - Sales

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BSBSLS502A Lead and manage a sales team

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to plan, implement, direct and evaluate sales team activities. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals working in a supervisory or managerial sales role who provide leadership to a sales team to increase the effectiveness of their performance.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan sales operations	1.1. Set sales teams objectives 1.2. Prepare sales plan and budget to support attainment of objectives 1.3. Develop objectives related to the nature of the sales operation which are consistent with marketing and sales strategies 1.4. Determine the size and structure of the sales team 1.5. Recruit, select and induct sales team members on an ongoing basis in accordance with job analysis and sales team objectives 1.6. Provide sales team members with initial training using appropriate ***training methods*** 1.7. Establish sales team compensation methods and levels 1.8. Establish sales territories, sales targets and performance standards
2. Direct sales team	2.1. Implement strategies to encourage, motivate and support sales team members 2.2. Coach or mentor sales team members to facilitate attainment of sales targets 2.3. Model client-focused tactics for sales team members 2.4. Allocate resources in accordance with organisational policies and procedures to support attainment of sales targets 2.5. Analyse sales volume, conversion rate data and cross-selling ratios to monitor sales performance 2.6. Monitor the ethical and social conduct of the sales team in accordance with legal requirements, professional expectations and organisational policy
3. Evaluate sales team performance	3.1. Establish systems to evaluate sales effectiveness against performance standards 3.2. Offer sales team members constructive feedback on their performance 3.3. Recognise and reward superior sales team member performance 3.4. Take ***corrective action*** where sub-standard sales team member performance is identified 3.5. Adjust sales team planning in light of evaluation processes

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to effectively work with a team
- financial management skills to manage a sales budget
- interpersonal skills to mentor, coach and apply training and development strategies
- leadership skills to gain trust and confidence of colleagues and clients
- literacy skills to interpret and explain complex, formal documents.

Required knowledge

- budgeting processes
- human resource management strategies
- principles of equal opportunity, equity, diversity and anti-discrimination
- identification and overview knowledge of key provisions of relevant legislation from all levels of government that affects business operations, codes of practice and national standards, such as:
  - anti-discrimination
- ethical principles
  - consumer protection
  - contract law
  - privacy laws
  - Trade Practices Act
- sales target and territory planning and management.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • management and development of a personal sales team to attain sales targets • knowledge of the principles of equal opportunity, equity, diversity and anti-discrimination.
Context of and specific resources for assessment	Assessment must ensure: • access to an actual workplace or simulated environment • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • analysis of responses to case studies and scenarios • direct questioning combined with portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • oral or written questioning to assess knowledge of techniques used to manage sales team performance • review of sales teams objectives • review of resources allocated to support attainment of sales targets • assessment of established sales territories, sales targets and performance standards • evaluation of recognition and rewarding of superior sales team member performance.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • management units.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Training methods may include:	• audio-tapes • case studies • computer packages • films • lectures • one-on-one instruction • role plays • simulations • slides • teleconferencing • videoconferencing • videotapes
Corrective action may include:	• additional training • individualised development plans • mentoring • ongoing feedback goal related feedback • re-training

Unit Sector(s)

Unit sector	

Competency field

Competency field	Business Development - Sales

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Co-requisite units

Co-requisite units		

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BSBSMB301A Investigate micro business opportunities

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to develop business ideas, and to investigate market needs and factors affecting potential markets. Specific legal requirements apply to the management of a micro business.

Application of the Unit

Application of the unit	This work will be undertaken by individuals who are establishing or operating a micro business providing for self employment.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Describe business ideas	1.1. Gather information for ***business ideas*** from ***appropriate sources*** 1.2. List details of business ideas and opportunities 1.3. Research alternative business ideas in light of the resources available 1.4. Specify and list products and services to match business ideas 1.5. Identify and research potential ***customer information*** for business ideas 1.6. Identify and take into account financial, business and technical skills available when researching business opportunities
2. Identify market needs	2.1. Collect information regarding market size and potential from appropriate sources 2.2. Investigate market trends and developments to identify market needs relative to business ideas 2.3. Gather market information from ***primary and secondary sources*** to identify possible market needs in relation to business ideas 2.4. Identify ***ethical and cultural requirements*** of the market and their impact on business ideas 2.5. Identify ***new and emerging markets*** and document their features 2.6. Identify and organise information on expected market growth or decline and associated risk factors
3. Investigate factors affecting the market	3.1. Identify projected changes in population, economic activity and the labour force that may affect business ideas 3.2. Identify movements in prices and projected changes in availability of resources 3.3. Review ***trends and developments*** and identify their potential impact on business ideas

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• analytical skills to identify market trends and developments, and to assess their impact on products and services • communication skills to request information from diverse sources • lateral thinking skills to generate ideas for potential businesses • literacy skills to interpret business and market information • numeracy skills to analyse data to aid business/market research • research skills to investigate market needs.
Required knowledge
• ethical and cultural requirements • research methods and data collection tools • sources of business and market information.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • thorough investigation of business opportunities and ideas • clearly identified products/services and customer information for each business idea • thorough collection and analysis of market information and associated factors relating to business ideas • knowledge of ethical and cultural requirements.
Context of and specific resources for assessment	Assessment must ensure: • access to relevant documentation • candidate's individual circumstances and work in the context of establishing or running a micro business, are the basis for assessment.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • portfolio of evidence relating to the development of the candidate's own business idea • review of report on an existing micro or small business known to the candidate • oral or written questioning to assess knowledge of research methods and data collection tools • review of market information gathered to identify possible market needs in relation to business ideas • assessment of reviewof trends and developments and their potential impact on business ideas.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • BSBSMB302A Develop a micro business proposal.

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Range Statement

RANGE STATEMENT	
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Business ideas may be influenced by:	• amount and type of finance available • cultural, family and/or community expectations • expected financial viability • finance required • lifestyle sought • number and type of competitors • returns expected or required by owner • skills of owner/operator
Appropriate sources may include:	• Aboriginal and cultural councils and incorporated bodies • accountants • Australian Bureau of Statistics • business advisory services • business brokers • business consultants • business incubators • business mentors and peers • current affairs • databases • financial institutions • government agencies set up to provide and assist business development for example Indigenous Business Australia (IBA), Business Entry Point (www.business.gov.au) • industry/trade associations • internet • lawyers and providers of legal advice • local councils • friends, family and community • market research publications • national and international publications • online gateways • role models and other successful businesses

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RANGE STATEMENT	
	• training providers
Customer information may include:	• customer characteristics • marketing issues to meet needs • specialised needs of customers
Primary sources may include:	• group interviews • market testing a segment of the market • interviews (face-to-face and telephone) • observation • questionnaires • samples • surveys
Secondary sources may include:	• chambers of commerce data • data held by research and industry specific organisations • polls published by advertising and media companies • published government statistics • university databases

Ethical and cultural requirements may include:	• codes of practice
	• cultural expectations and influences
	• ethical principles
	  • government policies and guidelines
	  • societal expectations
	  • social responsibilities, for example protection of children, environmental issues

New and emerging markets may include:	• e-commerce • export market • niche or segment of the market not currently penetrated
Trends and developments may include:	• changes in technology • demographic trends • ecological/environmental trends • economic trends (local, regional, national, international) • government activities, fro example interest rates, deregulation • industrial trends • social and cultural factors

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Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Small and Micro Business

Co-requisite units

Co-requisite units		

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BSBSMB401A Establish legal and risk management requirements of small business

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to identify and comply with the regulatory, legal, taxation and insurance requirements, and risk management needs of small business. Specific legal requirements apply to the management of a small business.

Application of the Unit

Application of the unit	This work is undertaken by individuals who operate a small business. The unit is suitable for existing micro and small businesses or setting up a new business or a department in a larger organisation.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and implement business legal requirements	1.1. Identify and research possible ***options for the business legal structure*** using ***appropriate sources*** 1.2. Determine ***legislation and regulatory requirements*** affecting the operations of the business under its chosen structure 1.3. Develop and implement procedures to ensure full compliance with relevant legislation and regulatory requirements
2. Comply with legislation, codes and regulatory requirements	2.1. Establish systems to ensure the ***legal rights and responsibilities*** of the business are identified and the business is adequately protected, specifically in relation to ***occupational health and safety*** (***OHS***), business registration and environmental requirements 2.2. Identify ***taxation principles and requirements*** relative to the business and follow procedures to ensure compliance 2.3. Identify and carefully maintain ***legal documents*** and maintain and update relevant ***records*** to ensure their ongoing security and accessibility 2.4. Monitor the provision of products and services of the business to protect legal rights and to comply with legal responsibilities 2.5. Conduct investigations to identify areas of non-compliance with legal and regulatory requirements and take corrective action where necessary
3. Negotiate and arrange contracts	3.1. Seek legal advice on contractual rights and obligations, if required, to clarify business liabilities 3.2. Investigate and assess potential products/services to determine ***procurement rights*** and to ensure protection of business interests where applicable 3.3. Negotiate and secure contractual procurement rights for goods and services including ***contracts with relevant people***, as required, in accordance with the business plan 3.4. Identify ***insurance requirements*** and acquire adequate cover 3.5. Identify options for leasing/ownership of business premises and complete contractual arrangements in accordance with the business plan

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• communication, reporting, record keeping and consultation skills to operate the business • literacy skills to interpret legal requirements, to develop policies and procedures and to analyse compliance information • research skills to investigate legal structures, and taxation and insurance requirements • time management skills to prioritise tasks and to meet key dates.
Required knowledge
• business registration and licensing requirements • commonwealth, state/territory and local government legislative requirements relating to business operation, especially in regard to OHS and environmental issues, equal employment opportunity, industrial relations, anti-discrimination, taxation • creation and termination of relevant legal contracts • cultural differences and legal implications • duty of care imposed by Law of Torts • legal rights and obligations of alternative ownership structures • record keeping to meet minimum legal and taxation requirements • relevant consumer legislation • relevant industry codes of practice • relevant insurance requirements and products.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • implementation of a systematic approach to identifying, managing and meeting legal and business requirements within culturally appropriate contexts • interpreting compliance data and formulating appropriate action • knowledge of relevant legislation.
Context of and specific resources for assessment	Assessment must ensure: • access to relevant documentation • candidate's individual circumstances and work in the context of establishing or running a small business, are the basis for assessment.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • portfolio of evidence including contracts negotiated and arranged • oral or written questioning to assess knowledge of relevant consumer legislation • review of procedures developed and implemented to ensure full compliance with relevant legislation and regulatory requirements • review of insurance cover acquired.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • BSBSMB402A Plan small business finances • BSBSMB404A Undertake small business planning.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Options for the business legal structure may include:	• company • cooperative • corporation • government owned enterprise • partnership • profit or not-for-profit legal structure • sole trader • trust
Options for the business legal structure may be influenced by:	• confidentiality • contractual requirements • family/community/cultural expectations • ownership transfer • partnership considerations • preferences of owners/stakeholders • protection of stakeholders and assets • requirements of financial backers • superannuation • taxation
Appropriate sources may include:	• business advisers • financial planners • government agencies • industry/trade associations • mentors • professional advisers (e.g. solicitors, accountants)

Legislation and regulatory requirements may include:	• local, state/territory, commonwealth and international legislation, regulations and codes of practice affecting business operations such as:
	  • relevant Acts and regulations
	  • industry and OHS codes of practice
	  • business registrations and licences

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RANGE STATEMENT	
	• planning and other permissions • environmental legislation • industrial law, agency law, property law, consumer legislation and standards, Torts Law and duty of care • equal employment opportunity (EEO) and anti-discrimination legislation, anti-competition regulations
Legal rights and responsibilities may include:	• culturally appropriate processes and protocols • marketing the business in accordance with consumer legislation • obligations imposed by choice of business structure • operating the business with a duty of care (Law of Torts)
Occupational health and safety and requirements must include:	• complying with relevant OHS codes of practice • establishing and maintaining a system for managing OHS • establishing hazard management arrangements to assess and control the risks associated with workplace hazards including development of written safe operating procedures • establishing OHS record keeping arrangements in accordance with regulatory requirements • OHS duty of care responsibilities • registering with state/territory workers compensation authority if applicable
Taxation principles and requirements may include:	• relevant taxation requirements/obligations for business • tax file number, Australian Business number, goods and services tax registration, PAYG and withholding arrangements
Legal documents may include:	• appropriate software for financial records • certificate of incorporation • constitution documents • franchise agreements and financial documentation • partnership agreements • statutory books for companies (register of members, register of directors and minute books)

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RANGE STATEMENT	
Records may include:	• environmental • financial • OHS • personnel • taxation
OHS records may include:	• accident reports and investigations • first aid and medical • hazardous substances register • instruction and training • manufacturers' and suppliers' information • material safety data sheets • OHS audits and inspections • plant maintenance and testing • workers compensation and rehabilitation
Procurement rights to products and services may include:	• any form of licensing • royalties, copyright, patents, trademarks, registered design and applications, intellectual property, software licenses, franchises, agencies
Contracts with relevant people may include:	• any person with whom the business has, or seeks to have, a performance-based relationship • owners, suppliers, employees, landlords, agents, distributors, customers
Insurance requirements may include:	• comprehensive insurance for vehicles/property • professional indemnity insurance • public liability insurance • third party insurance on motor vehicles • workers compensation • other insurance cover as required by state/territory or commonwealth legislation, contractual obligations or as recommended for the industry/type of business

Unit Sector(s)

Unit sector	

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Competency field

Competency field	Management and Leadership - Small and Micro Business

Co-requisite units

Co-requisite units		

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BSBSMB402A Plan small business finances

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to develop a financial plan to support business viability. Specific legal requirements apply to the management of a small business.

Application of the Unit

Application of the unit	This work is undertaken by individuals who operate a small business. The unit is suitable for existing micro and small businesses or a department in a larger organisation.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify costs, calculate prices and prepare profit statement	1.1. Identify and document ***costs*** associated with the production and delivery of the business' products/services 1.2. Calculate prices based on costs and profit margin, as an hourly charge out rate for labour or unit price for products 1.3. Calculate break-even sales point to establish business viability and profit margins 1.4. Identify appropriate ***pricing strategies*** in relation to market conditions to meet business profit targets 1.5. Prepare projected profit statement to supplement the business plan
2. Develop a FINANCIAL PLAN	2.1. Set ***profit targets/goals*** to reflect owner's desired returns 2.2. Identify working capital requirements necessary to attain profit projections 2.3. Identify non-current asset requirements and consider alternative asset management strategies 2.4. Prepare ***cash flow projections*** to enable business operation in accordance with business plan and ***legal requirements*** 2.5. Identify capital investment requirements accurately for each operational period 2.6. Select budget targets to enable ongoing monitoring of financial performance
3. Acquire finance	3.1. Identify start-up and ongoing financial requirements according to financial plan/budget 3.2. Identify ***sources of finance***, including potential ***financial backers***, to provide required liquidity for the business to complement business goals and objectives 3.3. Investigate cost of securing finance on optimal terms 3.4. Identify strategies to obtain finance as required to ensure financial viability of the business

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• analytical skills to interpret financial data • communication skills to secure finance • literacy skills to develop a financial plan and to interpret legal requirements and financial reports • numeracy skills to calculate costs, prices, profit and other financial information • research skills to identify costs and sources of finance.
Required knowledge
• break-even analysis • costing for the business, including margin/mark-up, hourly charge out rates and unit costs • financial decision making relevant to the business • methods and relative costs of obtaining finance • principles for preparation of balance sheets • principles for preparation of cash flow forecasts • principles for preparation of profit and loss statements • purpose of financial reports • relevant accounting terminology • working capital cycles.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • development of a financial plan which identifies the financial requirements of the business, including profit targets, cash flow projections and strategies for the acquisition of finance • knowledge of financial decision making relevant to the business.
Context of and specific resources for assessment	Assessment must ensure: • access to relevant documentation • candidate's individual circumstances and work in the context of establishing or running a small business, are the basis for assessment.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • portfolio of evidence including financial plan and records • review of projected profit statement prepared to supplement the business plan • review of cash flow projections • oral or written questioning to asses knowledge of principles for preparation of cash flow forecasts.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • BSBSMB401A Establish legal and risk management requirements of small business • BSBSMB404A Undertake small business planning • BSBSMB405A Monitor and manage small business operations • BSBSMB406A Manage small business finances.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Costs may include:	• direct/indirect costs • fixed, variable, semi-variable costs • overheads and employee costs
Pricing strategies may include:	• competitor analysis • cost/volume/profit analysis • cost factors • cost plus pricing • demand-based pricing • discounting • market conditions • penetration pricing • perceived value • product mix • skimming
Financial plan may include:	• analysis of sales by product/service, identifying where they were sold and to whom • cash flow estimates for each forward period • current financial state of the enterprise (or owner/operator) • estimates of profit and loss projections for each forward period • financial performance to date (if applicable) • likely return on investment • monthly, quarterly or annual returns • non-recurrent assets calculations • profit, turnover, capital and equity targets • projected profit targets, pricing strategies, margins • projections of likely financial results (budgeting) • projections, which may vary depending on the importance of such information and the stage in the life of the business • resources required to implement the proposed marketing and production strategies (staff,

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RANGE STATEMENT	
	materials, plant and equipment) • review of financial inputs required (sources and forms of finance) • risks and measures to manage or minimise risks • working, fixed, debt and equity capital • working in conjunction with external consultants e.g. investment analysts, accountants, financiers
Profit targets/goals may include:	• break-even point • cost of goods/services sold • gross profit/net profit • desired actual/notional salary for owners/managers • desired return on investment • sales turnover/gross fees or income
Cash flow projections may include:	• anticipated payments • anticipated receipts • customer credit policy/debt recovery • taxation provisions
Legal requirements may include:	• contractual arrangements (partnership agreements, trust deeds) • corporations law • industrial law (for payroll records) • taxation law
Sources of finance may include:	• personal, financial institutions, trade/industry sources • government sources, for example commonwealth and state/territory governments which provide various forms of technical and financial assistance including direct cash grants, loans, subsidies, tax concessions, and professional and technical advice
Financial backers may include:	• financiers/banks/lending institutions • leasing and hire purchase financiers • providers of venture capital • shareholders/partners/owners/family/friends

Unit Sector(s)

Unit sector	

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Competency field

Competency field	Management and Leadership - Small and Micro Business

Co-requisite units

Co-requisite units		

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BSBSMB404A Undertake small business planning

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to research and develop an integrated business plan for achieving business goals and objectives. Specific legal requirements apply to the management of a small business.

Application of the Unit

Application of the unit	This work is undertaken by individuals who operate a small business. This unit is suitable for micro and small businesses or a department in a larger organisation.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify elements of the business plan	1.1. Identify purpose of the ***business plan*** 1.2. Identify and review the essential components of the business plan 1.3. Identify and document ***business goals and objectives*** as a basis for measuring business performance
2. Develop a business plan	2.1. Research resources, legal and compliance requirements, specifically in relation to ***occupational health and safety*** (***OHS***), in accordance with business goals and objectives 2.2. Research market needs, and market size and potential 2.3. Identify sources and costs of finance, from the ***financial plan***, to provide required liquidity and profitability for the business 2.4. Identify methods, from the ***marketing strategies***, to promote the market exposure of the business 2.5. Identify methods/means of production/operation from the ***production/operations plan*** to conform with business goals and objectives 2.6. Identify ***staffing requirements*** to effectively produce/deliver products/services 2.7. Identify ***specialist services*** and sources of advice, where required, and cost in accordance with resources available
3. Develop strategies for minimising risks	3.1. Identify specific interests and objectives of ***relevant people*** and seek and confirm their support of the planned business direction 3.2. Identify and develop ***risk management strategies*** according to business goals and objectives, and relevant legal requirements 3.3. Develop ***contingency plan*** to address possible areas of non-conformance with the plan

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• communication skills to assess business performance • literacy skills to enable interpretation of business information • numeracy skills to analyse data.
Required knowledge
• commonwealth, state/territory and local government legislative requirements relating to business operation, especially in regard to OHS and environmental issues, equal employment opportunity, industrial relations and anti-discrimination • methods of evaluation • OHS responsibilities and procedures for identifying hazards relevant to the business • planning processes • preparation of a business plan • principles of risk management relevant to business planning • reasons for and benefits of, business planning • relevant industry codes of practice • setting goals and objectives • types of business planning - feasibility studies; strategic, operational, financial and marketing planning.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • development of a business plan which provides for finance, marketing and provision of products/services to facilitate the business goals and objectives • identification of and planning for, OHS and duty of care responsibilities • development of risk management strategies • knowledge of relevant legislation.
Context of and specific resources for assessment	Assessment must ensure: • access to relevant documentation • candidate's individual circumstances and work in the context of running a small business, are the basis for assessment.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • portfolio of evidence including a business plan and risk management strategies • oral or written questioning to assess knowledge of OHS responsibilities and procedures for identifying hazards relevant to the business • demonstration of practical skills • review of documented business goals and objectives • review of contingency plans developed to address possible areas of non-conformance with the business plan.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • BSBSMB401A Establish legal and risk management requirements of small business • BSBSMB402A Plan small business finances • BSBSMB403A Market the small business.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Business plan may include:	• business opportunities, which may be influenced by:
	  • amount and types of finance available
	  • expected financial viability
	  • skills of operator
	• details of ownership/management
	• finance, expenditure statement, balance sheet and cash flow forecast, projections for the initial years of operation assumptions underlying the business plan, expected level of inflation and taxation, expected trend of interest rate, capital expenditure and its timing, stock turnover, debtors collection period, creditor payment period, return on investment
	• level of risk involved, risk assessment and management
	• market focus of the business
	• marketing requirements
	• need to raise finance and requirements of lenders
	• organisation/operational arrangements
	• proposed size and scale of the business
	• recognition of any seasonal or cyclical (time-based) elements which are crucial to the success of the business
	• resources required and available
	• sources of funding
	• specialist services and sources of advice that may be required
	• staffing
	• stages in the business development

Business goals and objectives may include:	• customer needs/marketing projections • family or community benefits

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RANGE STATEMENT	
	• financial projections • goals, objectives, plans, systems and processes • lifestyle issues • market focus of the business • proposed size and scale of the business • short-, medium- or long-term goals • social responsibility
Occupational health and safety issues must include:	• identification of specific hazard issues such as occupational violence, security, manual handling, equipment and hazardous substances • management of the organisation and operation of OHS as part of the business plan • procedures for managing hazards in the workplace (identify, assess and control) • provisions for ensuring safety of members of the public and contractors visiting the premises/worksite
Financial plan may include:	• analysis of sales by product/service, identifying where they were sold and to whom • cash flow estimates for each forward period • current financial state of the enterprise (or owner/operator) • estimates of profit and loss projections for each forward period • financial performance to date (if applicable) • likely return on investment • monthly, quarterly or annual returns • non-recurrent assets calculations • profit, turnover, capital and equity targets • projected profit targets, pricing strategies, margins • projections of likely financial results (budgeting) • projections, which may vary depending on the importance of such information and the stage in the life of the business • resources required to implement the proposed marketing and production strategies (staff, materials, plant and equipment) • review of financial inputs required (sources

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RANGE STATEMENT	
	and forms of finance) • risks and measures to manage or minimise risks • working, fixed, debt and equity capital
Marketing strategies may include:	• achieving lower costs of production and distribution than competitors • creating a very different product line or service so that the business becomes a class leader in the industry • distribution • pricing, presentation and display of products/services • product design and packaging • product range and mix • promotion and advertising • pursuing cost leadership and/or product differentiation within a specialist market segment
Production/operations plan may include:	• customer requirements, market expectations, budgetary constraints • industrial relations climate and quality assurance considerations • means of supply and distribution • operational targets and action plan, which may include short-, medium- or long-term goals • options for production, delivery, technical and customer service and support
Staffing requirements may include:	• full-time, part-time staff, permanent, temporary or casual staff • owner/operator • sub-contractors or external advisers/consultants
Specialist services may include:	• accountants • business advisors and consultants • business brokers • contractors • government agencies • industry/trade associations • lawyers and providers of legal advice • mentors

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RANGE STATEMENT	
	• online gateways
Relevant people may include:	• clients • family members • franchise agency • owner/operator, partners, financial backers • regulatory bodies • suppliers • trade or industry associations
Risk management strategies may include:	• breach of contract, product liability • knowledge management • measures to manage risk including professional indemnity, securing appropriate insurance to cover loss of earnings through sickness/accidents, drought, flood, fire, theft • security systems to provide physical security of premises, plant, equipment, goods and services • security of intellectual property
Risk management strategies must include:	• OHS requirements
Contingency plan may include:	• disturbances to cash flow, supply and/or distribution • sickness or personal considerations

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Small and Micro Business

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Co-requisite units

Co-requisite units		

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BSBSMB405B Monitor and manage small business operations

Modification History

Release	Comments
Release 1	This version first released with *BSB07 Business Training Package version 6.0* Revised unit. Required knowledge and Range Statement changed to include environmentally sustainable practices Replaces BSBSMB405A Monitor and manage small business operations

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to operate a small business and to implement a business plan. The strategies involve monitoring, managing and reviewing operational procedures.
Specific legal requirements apply to the management of a small business.

Application of the Unit

This work is undertaken by individuals who operate a small business.
The unit is suitable for existing micro and small businesses or a department in a larger organisation.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Element	Performance Criteria
Elements describe the essential outcomes of a unit of competency.	*Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.*

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Elements and Performance Criteria

1. Develop o***perational strategies and procedures***	1.1 Develop an action plan to provide a clear and coherent direction, in accordance with the ***business goals and objectives*** 1.2 Identify ***occupational health and safety (OHS) and environmental issues*** and implement strategies to minimise risk factors 1.3 Develop a ***quality system*** for the business in line with industry standards, compliance requirements and cultural criteria 1.4 Develop performance measures and ***operational targets*** to conform with the business plan 1.5 Develop strategies for innovation, including the utilisation of existing, new or emerging technologies, where practicable, to optimise business performance
2. Implement operational strategies and procedures	2.1 Implement systems and key performance indicators/targets to monitor business performance and customer satisfaction 2.2 Implement systems to control stock, expenditure/cost, wastage/shrinkage and risks to health and safety in accordance with the business plan 2.3 Maintain staffing requirements, where applicable, within budget to maximise productivity 2.4 Carry out the provision of goods/services in accordance with established legal, ethical cultural and ***technical standards*** 2.5 Provide goods/services in accordance with time, cost and quality specifications, and customer requirements 2.6 Apply quality procedures to address product/service and customer requirements
3. Monitor business performance	3.1 Regularly monitor/review the achievement of operational targets to ensure optimum business performance, in accordance with the business plan goals and objectives 3.2 Review systems and structures, with a view to more effectively supporting business performance 3.3 Investigate and analyse operating problems to establish causes and implement changes as required as part of the business quality system 3.4 Amend operational policies and procedures to incorporate corrective action
4. Review business operations	4.1 Review and adjust business plan, as required, to maintain business viability, in accordance with business goals and objectives

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	4.2 Clearly record proposed changes to aid future planning and evaluation 4.3 Undertake ongoing research into new business opportunities and adjust business goals and objectives as new business opportunities arise

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- analytical skills to develop criteria and targets for the business plan
- communication skills to question, clarify and report
- literacy skills to interpret legal requirements, company policies and procedures
- numeracy skills to manage performance information and to control the finances
- technology skills to use relevant business equipment.

Required knowledge

- methods for developing and maintaining networks
- methods for implementing operation and revenue control systems
- methods for monitoring performance and implementing improvements
- OHS responsibilities and procedures for managing hazards
- principles of risk management relevant to the business, including risk assessment
- quality system principles and methods
- relevant industry codes of practice
- relevant marketing, sales and financial concepts
- relevant performance measures
- role of innovation
- systems to manage staff, stock, expenditure, services and customer service
- environmentally sustainable business practice and operation
- technical or specialist skills relevant to the business operation.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • developing strategies and procedures to successfully manage the operation of the business • making appropriate adjustments to the business operations as required • knowledge of quality system principles and methods.
Context of and specific resources for assessment	Assessment must ensure: • access to relevant documentation • candidate's individual circumstances and work in the context of running a small business, are the basis for assessment.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • portfolio of evidence including operational strategies and procedures • oral or written questioning to assess knowledge of principles of risk management relevant to the business, including risk assessment • review of analysis of operating problems (establishing causes and implementing changes as required as part of the business quality system) • review of records proposing changes to the business operations.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • BSBSMB406A Manage small business finances • BSBSMB407A Manage a small team.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Operational strategies and procedures may be determined by:	• business premises (size, location, layout) • financial control systems and procedures • management and administrative systems and procedures • methods/techniques/technology • physical and natural resources • plant and equipment , including OHS requirements • premises, plant and equipment, which may be new or previously owned • purchase (sole or shared ownership) or leasing • raw materials • requirements, which may be one-off requirements or recurrent requirements (such as equipment maintenance) specific to the nature of the business • technology • environmentally sustainable principles of business operation • use of existing, new and emerging technologies including e-commerce.
Business goals and objectives may include:	• customer needs/marketing projections • family or community benefits • financial projections • goals, objectives, plans, systems and processes • lifestyle issues • proposed size and scale of the business, market focus of the business • short-, medium- or long-term goals • social responsibility.
Occupational health and safety and environmental issues must include:	• controls, which may include instructions to workplace personnel concerning site hazards and controls, material safety data sheets, use of personal protective equipment, vehicle access, signs and barricades, traffic control, outside contractors • establishment and maintenance of procedures for assessing and controlling risks • establishment and maintenance of procedures for

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	identifying risks to health and safety • environmentally sustainable purchase and supply of goods and services • waste and by-products.
Quality system may include:	• manual or computer quality control systems • quality assurance/management approaches • random inspections and assessments of goods and services against predetermined standards • random inspections and assessments of processes against predetermined standards • random sampling and follow-up of customers.
Operational targets may include:	• external targets, which may relate to market share and positioning and may involve exploring new markets, building national or international trade links • internal targets, which may relate to size, quality, quantity and diversity, wages to sales, sales to area/stock levels/stock turnover/average debtor payment periods and levels • staffing level and skills mix • targets, which may be short-, medium- or long-term.
Technical standards may include:	• current and generally agreed descriptions of what the product/service is, how it should be produced/delivered and the environmental sustainability, quality, safety, efficiency or other measures to determine the activity is done effectively.

Unit Sector(s)

Management and Leadership – Small and Micro Business

Custom Content Section

Not applicable.

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BSBSMB406A Manage small business finances

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to implement, monitor and review strategies for the ongoing management of a small business's finances. It also includes day to day financial management of the small business. Specific legal requirements apply to the management of a small business.

Application of the Unit

Application of the unit	This work is undertaken by individuals who operate a small business. The unit is suitable for existing micro and small businesses or a department in a larger organisation.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Implement financial plan	1.1. Identify ***financial information*** requirements and obtain ***specialist services***, as required, to profitably operate and extend the business in accordance with the business plan 1.2. Produce financial budgets/projections, including ***cash flow*** estimates, as required for each forward period, and distribute to ***relevant people*** in accordance with legal requirements 1.3. Negotiate, secure and manage business capital to best enable implementation of the business plan and to meet the requirements of ***financial backers*** 1.4. Develop and maintain strategies to enable adequate financial provision for taxation in accordance with legal requirements 1.5. Develop, monitor and maintain client ***credit policies***, including contingencies for debtors in default, to maximise cash flow 1.6. Select key performance indicators to enable ongoing monitoring of financial performance 1.7. Record and communicate financial procedures to relevant people to facilitate implementation of the business plan
2. Monitor financial performance	2.1. Regularly monitor and report on financial performance targets and analyse data to establish the extent to which the ***financial plan*** has been met 2.2. Monitor marketing and operational strategies for their effects on the financial plan 2.3. Calculate and evaluate ***financial ratios*** according to own/industry benchmarks 2.4. Assess financial plan to determine whether variations or alternative plans are needed, and change as required

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• analytical skills to interpret financial data • communication skills to negotiate capital and to report on performance • literacy skills to interpret legal requirements and financial reports • numeracy skills to calculate costs, prices, profit and other financial information.
Required knowledge
The following knowledge must be assessed as part of this unit: • benchmarking • financial decision making relevant to the business • financial indicators • purpose of financial reports • preparation and interpretation of budget/actual reports • principles for preparation of balance sheets and their interpretation • principles for preparation of profit and loss statements and their interpretation • stock records/stock control relevant to the business.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • development, implementation and review of strategies for the ongoing management of finance • maintenance of day-to-day financial management of the business as well as implementation of broad financial strategies • knowledge of purpose of financial reports.
Context of and specific resources for assessment	Assessment must ensure: • access to relevant documentation • candidate's individual circumstances and work in the context of establishing or running a small business, are the basis for assessment.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • portfolio of evidence including financial reports • preparation and review of financial ratios • review of cash flow projections • analysis of development, monitoring and maintenance of client credit policies • oral or written questioning to assess knowledge of principles for preparation of balance sheets and their interpretation.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • BSBSMB402A Plan small business finances • BSBSMB405A Monitor and manage small business operations.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Financial plan may include:	• analysis of sales by product/service, identifying where they were sold and to whom • cash flow estimates for each forward period • current financial state of the enterprise (or owner/operator) • estimates of profit and loss projections for each forward period • financial performance to date (if applicable) • likely return on investment • monthly, quarterly or annual returns • non-recurrent assets calculations • profit, turnover, capital and equity targets • projected profit targets, pricing strategies, margins • projections of likely financial results (budgeting) • projections, which may vary depending on the importance of such information and the stage in the life of the business • resources required to implement the proposed marketing and production strategies (staff, materials, plant and equipment) • review of financial inputs required (sources and forms of finance) • risks and measures to manage or minimise risks • working, fixed, debt and equity capital • working in conjunction with external consultants e.g. investment analysts, accountants, financiers

Financial information may include:	• accrual of staff leave/entitlements
	• asset management strategies which may include:
	  • owning, leasing, sharing, syndicating
	  • maintaining and deploying assets
	• asset registers
	• balance sheets
	• bookkeeping/accounting/stock/job costing records

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RANGE STATEMENT	
	• business activity statements • business capital • cash book • cash flow forecasts • financial budgets • financial indicators, which may be short-, medium- and/or long-term • payroll records, superannuation entitlements • profit and loss statements • ratios for profitability, liquidity/efficiency/financial structure • risk management • statements/forecasts • taxation returns including goods and services tax
Specialist services may include:	• accountants • business brokers/business consultants • government agencies • industry/trade associations • lawyers and providers of legal advice • mentors • online gateways • providers of training in accounting software
Cash flow may include:	• anticipated payments • anticipated receipts • customer credit policy/debt recovery • taxation provisions
Relevant people may include:	• family members • financial backers • franchise agency • owner/operator • partners • regulatory bodies • trade or industry associations
Financial backers may include:	• financiers/banks/lending institutions • leasing and hire purchase financiers • providers of venture capital • shareholders/partners/owners/family/friends
Credit policies may include:	• collateral • credit limits • credit references

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RANGE STATEMENT	
	• debt collection • payment options • proof of Indigenous identity • trading terms
Financial ratios may include:	• current ratio • days debtors outstanding • days stock on hand • expense percentages • gross profit percentage • liquid ratio • net profit percentage • proprietary/debt ratio • return on investment/return on total assets • staff productivity measures • stock turn rates

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Small and Micro Business

Co-requisite units

Co-requisite units		

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BSBSMB407A Manage a small team

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to plan for the management of and to manage staff. It involves industrial relations, staff selection, staff records, induction, training, team development and career planning to enhance business operations through retaining a competent, committed and motivated team in the workplace. Specific legal requirements apply to the management of a small business.

Application of the Unit

Application of the unit	This work is undertaken by individuals who operate a small business. The unit is suitable for existing micro and small businesses or a department in a larger organisation.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop staffing plan	1.1. Determine ***staffing requirements*** to allow the business to run effectively, in accordance with the business requirements as outlined in the business plan 1.2. Identify and compare the existing skills/competencies of owner/s and staff with business requirements to identify any gaps 1.3. Develop ***policies and procedures*** for owner/s and staff, in accordance with the business plan
2. Recruit, induct, train and retain the team	2.1. Develop job/position descriptions, competencies required and selection criteria to meet the needs of the business 2.2. Judge information obtained from each candidate against specified selection criteria and decide selection in accordance with business needs and legal requirements 2.3. Induct new staff members in accordance with the policies and procedures of the business 2.4. Make team members aware of their responsibilities and performance requirements as soon as practicable and take opportunities to coach team members who are unfamiliar with the procedures of the business 2.5. Develop and implement a ***staff development program and career paths*** based on the requirements of business and staff competencies 2.6. ***Advertise staff vacancies*** appropriately in accordance with staffing plan
3. Comply with INDUSTRIAL RELATIONS obligations	3.1. Clarify workplace rights and obligations of employers and employees, in accordance with ***legal requirements and codes of practice*** 3.2. Counsel staff, if required, in a positive and constructive manner and record outcomes accurately
4. Maintain staff records	4.1. Develop ***staff records system*** to provide timely and accurate information, in accordance with confidentiality, legal and taxation requirements 4.2. Monitor and accurately maintain the system for recording and retrieving personnel and payroll information and seek specialist advice where required
5. Manage staff	5.1. Regularly review contribution and skills of self and

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ELEMENT	PERFORMANCE CRITERIA
	other team members to ensure performance is in line with agreed ***performance measures*** 5.2. Monitor and adjust staffing requirements to respond to any changes in tasks and functions required by the business 5.3. Support and encourage staff, and acknowledge and reward their contribution to the business 5.4. Regularly provide opportunities for staff to discuss work related issues 5.5. Develop ***contingency plans*** to cope with unexpected or extreme situations and take appropriate corrective action as required
6. Review team performance	6.1. Develop positive and constructive relationships with and between ***team members*** 6.2. Review and update team objectives in support of business goals on a regular basis in consultation with team members 6.3. Identify strengths and weaknesses of team against current and expected work requirements 6.4. Schedule time, on a regular basis, for team members to review work operations in order to maintain and improve operational efficiency 6.5. Encourage team members to monitor their own performance, suggest improvements and to identify professional development needs, in accordance with personal and business requirements 6.6. Monitor and review staff turnover rate

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• analytical skills to identify workplace skill gaps • coaching skills • communication skills to relate to staff • conflict resolution skills • literacy skills to interpret legal requirements, to compile reports and to prepare a job/position description • team building and motivation skills.
Required knowledge
• commonwealth, state/territory and local government legislative requirements relating to business operation, especially in regard to occupational health and safety (OHS) and environmental issues, equal employment opportunity (EEO), industrial relations and anti-discrimination • OHS responsibilities and procedures for managing hazards • relevant industry awards/enterprise agreements • staff development and career planning • staff counselling, grievance and disciplinary procedures • unfair dismissal legislation and procedures.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • managing a small team including staff selection, staff records, induction, training and development • developing and maintaining team performance to enhance business operations • knowledge of relevant legislative requirements affecting business operation.
Context of and specific resources for assessment	Assessment must ensure: • access to relevant documentation • candidate's individual circumstances and work in the context of running a small business, are the basis for assessment.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • portfolio of evidence including staff policies and records, and contingency plans • oral or written questioning to assess knowledge of staff recruitment procedures, staff development and review programs • review of job/position descriptions and selection criteria developed • review of documentation monitoring and reviewing staff turnover rate.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • BSBSMB405A Monitor and manage small business operations.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Staffing requirements may include:	• full-time, part-time, permanent, temporary or casual • number of staff • responsibilities, competencies required • self, other owners, family and/or friends • sub-contractors or external advisors/consultants • time commitment, performance expectations
Policies and procedures must include:	• complaint and grievance procedures • culturally appropriate entitlements e.g. funeral leave, national/religious days • culturally appropriate procedures e.g. how business will enact cultural requirements for relationships between owner/operator, employees and service providers • employment conditions, equal opportunity, anti-discrimination, cultural diversity • induction and training • OHS • recruitment and selection • performance measures • professional development
Staff development program and career paths may include	• attendance at courses • career planning • coaching • flexible learning • job rotation • mentoring • on-the-job training • professional development • staff exchanges • succession planning
Advertising staff vacancies may	• electronic (radio, television and internet)

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RANGE STATEMENT	
include:	• noticeboards • print media • word-of-mouth
Industrial relations may include:	• awards and/or industrial agreements and relevant industrial instruments • counselling, dismissal procedures
Legal requirements and codes of practice may include:	• award and enterprise agreements and relevant industrial instruments • commonwealth, state/territory and local government legislative requirements affecting business operation, especially in regard to OHS and environmental issues, EEO, industrial relations and anti-discrimination • relevant industry codes of practice
Staff records system must include:	• disciplinary and grievance procedures • employee records (including tax file number, remuneration, leave and training records) • job/position descriptions • OHS record • records of taxation and superannuation payments made
Performance measures may include:	• overall staff productivity • percentage of chargeable hours/days per week • performance of key people • ratio of direct workers to those who support, supervise or manage them • ratio of sales dollars per employee • staff morale, work ethic, work satisfaction
Contingency plans may include:	• accidents or emergencies • environmental issues • fluctuating workloads • OHS • unpredicted customer demand/busy periods • unpredicted staff shortages
Team members may include:	• employees, trainees/apprentices, sub-contractors or external advisers/consultants • owner/s, partners, family members

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Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Small and Micro Business

Co-requisite units

Co-requisite units		

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BSBWOR401A Establish effective workplace relationships

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to collect, analyse and communicate information and to use that information to develop and maintain effective working relationships and networks, with particular regard to communication and representation. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	Frontline managers play an important role in developing and maintaining positive relationships in internal and external environments so that customers, suppliers and the organisation achieve planned outputs and outcomes. They play a prominent part in motivating, mentoring, coaching and developing team cohesion through providing leadership for the team and forming the bridge between the management of the organisation and team members. At this level, work will normally be carried out within routine and non routine methods and procedures, which require planning and evaluation, and leadership and guidance of others.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Collect, analyse and communicate information and ideas	1.1. Collect relevant ***information*** from appropriate sources and analyse and share with the work team to improve work performance 1.2. Communicate ideas and information in a manner which is appropriate and sensitive to the cultural and social diversity of the audience and any specific needs 1.3. Implement ***consultation processes*** to encourage employees to contribute to issues related to their work, and promptly relay feedback to the work team in regard to outcomes 1.4. Seek and value contributions from internal and external sources in developing and refining new ideas and approaches 1.5. Implement ***processes*** to ensure that issues raised are resolved promptly or referred to ***relevant personnel*** as required
2. Develop trust and confidence	2.1. Treat all internal and external contacts with integrity, respect and empathy 2.2. Use the ***organisation's social***, ***ethical and business standards*** to develop and maintain effective relationships 2.3. Gain and maintain the trust and confidence of ***colleagues***, ***customers and suppliers*** through competent performance 2.4. Adjust interpersonal styles and methods to meet organisation's social and cultural environment 2.5. Encourage other members of the work team to follow examples set, according to ***organisation's policies and procedures***
3. Develop and maintain networks and relationships	3.1. Use ***networks*** to identify and build relationships 3.2. Use networks and other work relationships to provide identifiable benefits for the team and organisation
4. Manage difficulties into positive outcomes	4.1. Identify and analyse difficulties, and take action to rectify the situation within the requirements of the organisation and relevant legislation 4.2. Guide and support colleagues to resolve work difficulties 4.3. Regularly review and improve ***workplace outcomes***

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ELEMENT	PERFORMANCE CRITERIA
	in consultation with relevant personnel 4.4. Manage ***poor work performance*** within the organisation's processes 4.5. Manage conflict constructively within the organisation's processes

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills

• coaching and mentoring skills to provide support to colleagues
• literacy skills to research, analyse, interpret and report information
• relationship management and communication skills to:
  • deal with people openly and fairly
  • forge effective relationships with internal and/or external people, and to develop and maintain these networks
  • gain the trust and confidence of colleagues
  • respond to unexpected demands from a range of people
  • use supportive and consultative processes effectively.

Required knowledge

• relevant legislation from all levels of government that affects business operation, especially in regard to occupational health and safety (OHS), and environmental issues, equal opportunity, industrial relations and anti-discrimination
• theory associated with managing work relationships to achieve planned outcomes:
  • developing trust and confidence
  • maintaining consistent behaviour in work relationships
  • understanding the cultural and social environment
  • identifying and assessing interpersonal styles
  • establishing, building and maintaining networks
  • identifying and resolving problems
  • resolving conflict
  • managing poor work performance
  • monitoring, analysing and introducing ways to improve work relationships.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • range of methods and techniques for communicating information and ideas to a range of stakeholders • range of methods and techniques for developing positive work relationships that build trust and confidence in the team • accessing and analysing information to achieve planned outcomes • techniques for resolving problems and conflicts and dealing with poor performance • knowledge of the theory associated with managing work relationships to achieve planned outcomes.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • demonstration of techniques in managing poor performance and communicating effectively • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • observation of performance in role plays • observation of presentations • oral or written questioning to assess knowledge of relevant legislation • review of consultation processesimplemented to encourage employees to contribute to issues related to their work • review of documentation outlining reviewing ofworkplace outcomes.
Guidance information for	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended,

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EVIDENCE GUIDE	
assessment	for example: • other units from the Certificate IV in Frontline Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Information may include:	• data appropriate to work roles and organisational policies that is shared and retrieved in writing or verbally, electronically or manually such as: • archived, filed and historical background data • individual and team performance data • marketing and customer related data • planning and organisational documents including the outcomes of continuous improvement and quality assurance • policies and procedures
Consultation processes may include:	• feedback to the work team and relevant personnel in relation to outcomes of the consultation process • opportunities for all employees to contribute to ideas and information about organisational issues
Processes to ensure that issues raised are resolved promptly or referred may include:	• conducting informal meetings • coordinating surveys or questionnaires • distributing newsletters or reports • exchanging informal dialogue with relevant personnel • participating in planned organisational activities
Relevant personnel may include:	• managers • OHS committee and other people with specialist responsibilities • other employees • supervisors • union representatives/groups
Organisation's social, ethical and business standards may refer to:	• implied standards such as honesty and respect relative to the organisational culture and generally accepted within the wider

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RANGE STATEMENT	

	community
	• rewards and recognition for high performing staff
	• standards expressed in legislation and regulations such as anti-discrimination legislation
	• written standards such as those expressed in:
	  • code of workplace conduct/behaviour
	  • dress code
	  • policies
	  • statement of workplace values
	  • vision and mission statements

Colleagues, customers and suppliers may include:	• both internal and external contacts • employees at the same level and more senior managers • people from a wide variety of social, cultural and ethnic backgrounds • team members
Organisation's policies and procedures may refer to:	• Materials Safety Data Sheets • organisational tasks and activities undertaken to meet performance outcomes • sets of accepted actions approved by the organisation • Standard Operating Procedures
Networks may be:	• established structures or unstructured arrangements and may include business or professional associations • informal or formal and with individuals or groups • internal and/or external
Workplace outcomes may include:	• OHS processes and procedures • performance of the work team
Poor work performance may refer to:	• individual team members • organisation as a whole • self • whole work team

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Unit Sector(s)

Unit sector	

Competency field

Competency field	Industry Capability - Workplace Effectiveness

Co-requisite units

Co-requisite units		

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BSBWOR402A Promote team effectiveness

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to promote teamwork. It involves developing team plans to meet expected outcomes, leading the work team, and proactively working with the management of the organisation. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	Frontline managers have an important leadership role in the development of efficient and effective work teams. They play a prominent part in team planning, supervising the performance of the team and developing team cohesion. They provide leadership for the team and bridge the gap between the management of the organisation and the team members. As such they must 'manage up' as well as manage their team/s.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan to achieve team outcomes	1.1. Identify, establish and document ***team purpose***, ***roles***, ***responsibilities***, ***goals***, ***plans and objectives*** in ***consultation*** with team members 1.2. Support team members in meeting expected outcomes
2. Develop team cohesion	2.1. Provide opportunities for input of team members into planning, decision making and operational aspects of work team 2.2. Encourage and support team members to take ***responsibility for own work*** and to assist each other in undertaking required roles and responsibilities 2.3. Provide ***feedback*** to team members to encourage, value and reward individual and team efforts and contributions 2.4. Recognise and address issues, concerns and problems identified by team members or refer to ***relevant persons*** as required
3. Participate in and facilitate work team	3.1. Actively encourage team members to participate in and take responsibility for team activities and communication processes 3.2. Give the team support to identify and resolve problems which impede its performance 3.3. Ensure own contribution to work team serves as a role model for others and enhances the organisation's image within the work team, the organisation and with clients/customers
4. Liaise with management	4.1. Maintain open ***communication*** with ***line manager/management*** at all times 4.2. Communicate information from line manager/management to the team 4.3. Communicate unresolved issues, concerns and problems raised by the team/team members to line manager/management and ensure follow-up action is taken 4.4. Communicate unresolved issues, concerns and problems related to the team/team members raised by line managers/management to the team and ensure follow-up to action is taken

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - boost team morale
  - deal with team conflict
  - deliver messages from management
  - facilitate discussion
  - mentor and coach
- leadership skills
- planning and organising skills.

Required knowledge

- organisational goals, objectives and plans
- organisational policy and procedures framework
- organisational structure, including organisational chart
- principles and techniques associated with:
  - delegation and work allocation
  - goal setting
  - group dynamics and processes
  - individual behaviour and difference
  - leadership
  - motivation
  - negotiation
  - planning.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • teamwork plan with details of how it was generated and how it will be monitored so that team goals can be met • techniques in communicating information, dealing with team conflict and resolving issues • knowledge of organisational goals, objectives and plans.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • analysis of responses to case studies and scenarios • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • observation of demonstrated techniques in working with team dynamics • observation of performance in role plays • oral or written questioning to assess knowledge of principles and techniques associated with group dynamics and processes • evaluation of opportunities provided for input of team members into planning, decision making and operational aspects of work team • review of feedback provided to team members • review of teamwork plan.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Certificate IV in Frontline

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EVIDENCE GUIDE	
	Management.

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Range Statement

RANGE STATEMENT	
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Team purpose, ***roles***, ***responsibilities***, ***goals***, ***plans and objectives*** may include:	• action plans, business plans and operational plans linked to strategic plans • expected outcomes and outputs • goals for individuals and the work team • individual and team performance plans and key performance indicators • occupational health and safety (OHS) responsibilities
Consultation may include:	• attending meetings, interviews, brainstorming sessions • using email/intranet communications, newsletters or other processes and devices which ensure that all employees have the opportunity to contribute to team and individual effectiveness • using mechanisms to provide feedback to the work team in relation to consultation outcomes
Responsibility for own work may involve:	• individual and joint actions • individuals and teams
Feedback may refer to:	• formal/informal gatherings between team members where there is communication on work related matters • informal communication of ideas and thoughts on specific tasks, outcomes, decisions, issues or behaviours
Relevant persons may include:	• colleagues • direct superior or other management representatives • OHS committees and other people with specialist responsibilities
Communication may include:	• face-to-face • formal/informal interaction

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RANGE STATEMENT	
	• verbal, written or electronic communication
Line manager/management may refer to:	• direct superior or other management representatives

Unit Sector(s)

Unit sector	

Competency field

Competency field	Management and Leadership - Management

Co-requisite units

Co-requisite units		

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BSBWOR501B Manage personal work priorities and professional development

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to manage own performance and professional development. Particular emphasis is on setting and meeting priorities, analysing information and using a range of strategies to develop further competence. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to managers and focuses on the need for managers to be organised, focussed and skilled, in order to effectively manage the work of others. As such it is an important unit for most managers, particularly as managers serve as role models and have a significant influence on the work culture and patterns of behaviour.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish personal work goals	1.1. Serve as a positive role model in the workplace through personal work planning and organisation 1.2. Ensure personal work goals, plans and activities reflect the organisation's plans, and ***own responsibilities and accountabilities*** 1.3. Measure and maintain personal performance in varying work conditions, work contexts and contingencies
2. Set and meet own work priorities	2.1. Take initiative to prioritise and facilitate competing demands to achieve personal, team and organisational goals and objectives 2.2. Use ***technology*** efficiently and effectively to manage work priorities and commitments 2.3. Maintain appropriate work-life balance, and ensure stress is effectively managed and health is attended to
3. Develop and maintain professional competence	3.1. Assess personal knowledge and skills against ***competency standards*** to determine development needs, priorities and plans 3.2. Seek feedback from employees, ***clients and colleagues*** and use this feedback to identify and develop ways to improve competence 3.3. Identify, evaluate, select and use ***development opportunities*** suitable to personal learning style/s to develop competence 3.4. Undertake participation in networks to enhance personal knowledge, skills and work relationships 3.5. Identify and develop new skills to achieve and maintain a competitive edge

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• communication skills to receive, analyse and report on feedback • literacy skills to interpret written and verbal information about workplace requirements • organisational skills to set and achieve priorities.
Required knowledge

• principles and techniques involved in the management and organisation of:
  • performance measurement
  • personal behaviour, self-awareness and personality traits identification
  • personal development plan
  • personal goal setting
  • time management
• management development opportunities and options for self
• organisation's policies, plans and procedures
• types of learning style/s and how they relate to the individual
• types of work methods and practices that can improve personal performance.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • systems and processes (electronic or paper-based) used to organise and prioritise tasks, which show how work is managed • personal development plan, with career objectives and an action plan
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • analysis of responses to case studies and scenarios • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • observation of presentations • oral or written questioning to asses knowledge of work methods and practices that can improve personal performance • review of personal work goals, plans and activities • evaluation of work-life balance • review of documentation assessing personal knowledge and skills against competency standards.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Diploma of Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Own responsibilities and accountabilities may include:	• expectations of workplace performance as expressed in a performance plan • outputs as expressed in position descriptions or duty statements • statement of conduct outlining an individual's responsibilities/actions/performance
Technology may include:	• computerised systems and software, databases, project management and word processing • electronic diary • personal digital assistant (PDA)
Competency standards may include:	• enterprise-specific units of competency consistent with work requirements • nationally endorsed units of competency consistent with work requirements
Clients and colleagues may be:	• colleagues at the same level and more senior managers • internal or external customers • people from a wide range of social, cultural and ethnic backgrounds and with a range of physical and mental abilities • team members
Development opportunities may include:	• action learning • coaching • exchange/rotation • induction • mentoring • shadowing • structured training programs

Unit Sector(s)

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Unit sector	

Competency field

Competency field	Management and Leadership - Management

Co-requisite units

Co-requisite units		

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BSBWOR502B Ensure team effectiveness

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to facilitate all aspects of teamwork within the organisation. It involves taking a leadership role in the development of team plans, leading and facilitating teamwork and actively engaging with the management of the organisation. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to managers and addresses the need for managers to facilitate work teams and to build a positive culture within work teams. The unit takes a systematic and planned approach to developing teams. It includes the soft skills as well as more structured approaches to the management of teams. At this level, work will normally be carried out within complex and diverse methods and procedures which require the exercise of considerable discretion and judgement, using a range of problem solving and decision making strategies.

Licensing/Regulatory Information

Not applicable.

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Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish team performance plan	1.1. ***Consult*** team members to establish a common understanding of team purpose, roles, responsibilities and ***accountabilities*** in accordance with organisational goals, plans and objectives 1.2. Develop ***performance plans*** to establish expected ***outcomes***, ***outputs***, ***key performance indicators*** and goals for work team 1.3. ***Support*** team members in meeting expected performance outcomes
2. Develop and facilitate team cohesion	2.1. Develop ***strategies*** to ensure team members have input into planning, decision making and operational aspects of work team 2.2. Develop ***policies and procedures*** to ensure team members take responsibility for own work and assist others to undertake required roles and responsibilities 2.3. Provide feedback to team members to encourage, value and reward individual and team efforts and contributions 2.4. Develop ***processes*** to ensure that issues, concerns and problems identified by team members are recognised and addressed
3. Facilitate teamwork	3.1. Encourage team members and individuals to participate in and to take responsibility for team activities, including communication processes 3.2. Support the team in identifying and resolving work performance problems 3.3. Ensure own contribution to work team serves as a role model for others and enhances the organisation's image for all ***stakeholders***
4. Liaise with stakeholders	4.1. Establish and maintain open communication processes with all stakeholders 4.2. Communicate information from ***line manager/management*** to the team 4.3. Communicate unresolved issues, concerns and problems raised by team members and follow-up with line manager/management and other relevant stakeholders 4.4. Evaluate and take necessary corrective action regarding unresolved issues, concerns and problems raised by internal or external stakeholders

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• communication skills to explain team goals, to address team conflict and to build an environment of trust • planning and organisational skills to keep team on track and focussed on work outcomes.
Required knowledge
• group behaviour • strategies for mentoring and coaching to informally guide and instruct team members • issue resolution • strategies for gaining consensus.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • range of techniques that can be used to build work teams, strengthen communications in the team and resolve issues • methods for engaging with stakeholders and obtaining advice from outside the work team, to ensure team is focussed and on track • knowledge of group behaviour.
Context of and specific resources for assessment	Assessment must ensure: • access to appropriate documentation and resources normally used in the workplace.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • analysis of responses to case studies and scenarios • assessment of written reports • demonstration of team building techniques • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • observation of performance in role plays • review of performance plans developed for work team • review of policies and procedures developed to ensure team members take responsibility for own work.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • other units from the Diploma of Management.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Consultation may refer to:	• conducting meetings, interviews, brainstorming sessions, email/intranet communications, newsletters or other processes and devices which ensure that all employees have the opportunity to contribute to team and individual performance plans • mechanisms used to provide feedback to the work team in relation to outcomes of consultation
Accountabilities may refer to:	• responsibilities as defined in position descriptions, codes of conduct/behaviour, duty statements or similar • statement of conduct outlining responsibilities/actions/performance
Performance plans may refer to:	• individual performance plans linked to team goals • team plans based on work assignments and responsibilities
Outcomes, ***outputs***, ***key performance indicators*** may refer to agreed:	• changes in work roles and responsibilities • improved individual and team, performance and participation • improvements to systems, operations • measures for monitoring and evaluating the efficiency or effectiveness of systems or services • quality standards and expectations • targets for productivity improvements such as reduced downtime, higher production levels, decreases in absenteeism • targets for training and development
Support may include:	• Coaching • Mentoring • Training and development opportunities • Clarification of roles and expectations

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RANGE STATEMENT	
	• Long term or short term plans • Meetings
Strategies may refer to:	• clarification of roles and expectations • electronic communication devices and processes, such as intranet and email communication systems, to facilitate input • long-term or short-term plans factoring in opportunities for team input • mentoring and 'buddy' systems to support team members in providing input • newsletters and briefings • training and development activities
Policies and procedures may refer to:	• organisational guidelines and systems that govern operational functions • procedures that detail the activities that must be carried out for the completion of actions and tasks • Standard Operating Procedures
Processes may refer to:	• brainstorming options with the team for addressing concerns • creating a matrix of issues and concerns and distributing for comment • discussions with individuals regarding their concerns • distributing drafts for comment with a range of options for resolution of concerns • training and development sessions
Stakeholders may include:	• Board members • business or government contacts • funding bodies • union/employee groups and representatives • work team
Line manager/management may refer to:	• chief executive officer • direct superior • other management representatives

Unit Sector(s)

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Unit sector	

Competency field

Competency field	Industry Capability - Workplace Effectiveness

Co-requisite units

Co-requisite units		

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BSBWRT401A Write complex documents

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to plan documents, draft text, prepare final text and produce documents of some complexity. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit	This unit applies to individuals who work in a range of business environments and are skilled in the creation of reports, information and general promotion documents that are more complex than basic correspondence, memos or forms and that require review and analysis of a range of information sources.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan documents	1.1. Determine the ***purposes*** of documents 1.2. Choose ***appropriate formats*** for documents 1.3. Establish ***means of communication*** 1.4. Determine ***requirements of documents*** 1.5. Determine ***categories and logical sequences of data***, ***information and knowledge*** to achieve document objectives 1.6. Develop overview of structure and content of documents
2. Draft text	2.1. Review and organise available data, information and knowledge according to proposed structure and content 2.2. Ensure data, information and knowledge is aggregated, interpreted and summarised to prepare text that satisfies document purposes and objectives 2.3. Include graphics as appropriate 2.4. Identify gaps in required data and information, and collect additional material from ***relevant enterprise personnel*** 2.5. Draft text according to document requirements and genre 2.6. Use language appropriate to the audience
3. Prepare final text	3.1. Review draft text to ensure document objectives are achieved and requirements are met 3.2. Check grammar, spelling and style for accuracy and punctuation 3.3. Ensure draft text is approved by ***relevant*** enterprise personnel 3.4. Process text amendments as required
4. Produce document	4.1. Choose basic ***design elements*** for documents appropriate to audience and purpose 4.2. Use word processing software to apply basic design elements to text 4.3. Check documents to ensure all requirements are met

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• communication skills to clarify requirements of documents • literacy skills to edit and proofread documents; to create documents with a complex, organised structure of linked paragraphs which use simple and complex syntactic structure • numeracy skills to collate and present data, graphs and annotated references • problem-solving skills to use processes flexibly and interchangeably.
Required knowledge
• enterprise style guide/house style • formatting styles and their impact on formatting, readability and appearance of documents • organisational requirements for ergonomics, work periods and breaks, and resource conservation techniques • rules and conventions for written English, as defined by general and specialist dictionaries and books about grammar.

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • production of documents • editing draft text to ensure accuracy and clarity of information • knowledge of enterprise style guide/house style.
Context of and specific resources for assessment	Assessment must ensure: • access to an actual workplace or simulated environment • access to office equipment and resources • examples of documents and style guides.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate • review of structure and content of documents • review of draft documents • review of final documents • demonstration of techniques • oral or written questioning to assess knowledge of word processing software functions.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • BSBITU401A Design and develop complex text documents.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Purposes of documents may include:	• conveying research findings • documenting policies, procedures and processes • influencing attitudes, opinions, beliefs • meeting legal requirements • meeting other data, information or knowledge needs of an audience • proposing recommendations, options and actions
Appropriate formats for documents may include:	• detailed business letters • emails • instructions and procedures • manuals • publications, leaflets, brochures • reports • speeches and presentations • submissions tender documentation and public notices • website text
Means of communication may include:	• software packages such as MS Word, MS Excel, MS PageMaker, MS PowerPoint and templates
Requirements of documents may include:	• compliance with genre • compliance with proformas, standardised reporting requirements or undertakings made by the organisation about reporting • file types and sizes for online documents • languages other than English requirements • legal or traditional requirements for the particular document format • organisational policy, procedures and guidelines applying to writing documents, including house style • point numbering systems • requirements for illustrations, photographs, graphs, charts, maps and other illustrative material

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RANGE STATEMENT	
	to explain texts • standards for references, footnotes, citations, acknowledgements • time lines, including deadlines • word length • writing styles, including simplicity of English and use of technical language
Categories and logical sequences of data, information and knowledge may include:	• arguments and rebuttals • categories and sequences traditionally used for the particular type of document being prepared • chronological, alphabetical or operating sequences • facts, observations, conclusions and recommendations • illustrative case studies and other examples • linking and summary statements • recommendations and supporting arguments
Relevant enterprise personnel may include:	• colleagues/staff in own workÂ section/ teamÂ members • consultative committees • internal providers of specialist expertise • managers/leaders/coordinators/supervisors • owners • staff in relevant work sections
Design elements may include:	• capitals and underlining • fonts • headings • illustrations, photographs and other illustrative material for design purposes • justification and alignment • lists and tables • logos, branding, organisational identity requirements • margins and paragraph indentation • page shape • page size • templates • use and amount of colour • use and amount of white space

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Unit Sector(s)

Unit sector	

Competency field

Competency field	Communication - Writing

Co-requisite units

Co-requisite units		

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CHCCOM403A Use targeted communication skills to build relationships

Modification History

Not Applicable

Unit Descriptor

Descriptor	This unit describes the knowledge and skills required to apply specific workplace communication techniques to build and maintain relationships with clients and colleagues based on respect and trust

Application of the Unit

Application	The communication skills described in this unit should be applied to target specific communication issues and may be applied across a range of workplace contexts involving application of a range of communication strategies to address specific needs and issues, working with various levels of social and cultural diversity

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Not Applicable

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Employability Skills Information

Employability Skills This unit contains Employability Skills

Elements and Performance Criteria Pre-Content

Elements define the essential outcomes of a unit of competency.

The Performance Criteria specify the level of performance required to demonstrate achievement of the Element. Terms in italics are elaborated in the Range Statement.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. *Communicate effectively* with clients and staff	1.1 Identify and use appropriate communication strategies to: • establish rapport • exchange information • facilitate resolution of issues • defuse potentially difficult situations 1.2 Conduct *interviews* according to *established procedures* 1.3 Give feedback and advice in a way which reflects current identified good practice 1.4 Demonstrate respect for individual, cultural and social differences, needs and rights in communicating with clients and colleagues 1.5 If communication break down occurs, respond appropriately and refer to other staff or specialist services if required to ensure duty of care responsibilities are met 1.6 Respond to enquiries in a manner that promotes achievement of mutual outcomes 1.7 Respect and consider differences in views in a way that values and encourages the contributions of others 1.8 Ensure communication represents the organisation effectively where appropriate

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ELEMENT	PERFORMANCE CRITERIA
2. Contribute to the implementation of effective communication strategies	2.1 Implement strategies to check on the effectiveness of communication with clients and colleagues 2.2 Facilitate access to interpretive and translation services as required 2.3 Regularly review established channels of communication to ensure clients and co workers are informed of relevant information in a timely way 2.4 Provide coaching in effective communication to colleagues and clients as required 2.5 Maintain relevant work-related networks and relationships as required to ensure client needs and organisation objectives are met
3. Use specific communication techniques to maintain constructive interaction	3.1 Put in place strategies to develop a trusting relationship that will enable negotiation of communication barriers 3.2 Use communication skills and processes to identify and address barriers to communication and facilitate identification of individual issues 3.3 Use effective skills in listening and providing feedback to ensure stories are heard and to support exploration and validation of issues raised 3.4 Seek agreement on processes to be followed to address issues within scope of own abilities, skills and work role 3.5 Make referral for conflict resolution and mediation as appropriate

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ELEMENT	PERFORMANCE CRITERIA
4. Facilitate discussions	4.1 Provide *opportunities* to fully explore all relevant issues 4.2 Routinely use strategies that encourage all group members to participate equally, including seeking and acknowledging contributions from all members 4.3 Routinely contribute to and follow objectives and agendas for meetings and discussions 4.4 Provide relevant information to groups as appropriate to facilitate outcomes 4.5 Evaluate group communication strategies to promote ongoing participation of all parties 4.6 Implement strategies to ensure the specific communication needs of individuals within the group are identified and addressed
5. Identify communication strategies to build relationships with clients who are involuntary or present communication challenges	5.1 Identify and address specific communication barriers such as: • closed or unreceptive attitudes • mistrust or misunderstanding of people, organisations, systems and/or processes • emotional states, such as fear, anger and frustration 5.2 Identify areas of mistrust or conflict that may require resolution 5.3 Identify the need to include *additional parties*

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level required for this unit.

Essential knowledge:

It is critical that the candidate demonstrate knowledge of:

- Effective communication strategies and techniques to address barriers and build and maintain relationships
- Recognition of communication styles of individuals
- Basic group dynamics and facilitation of group discussion

The candidate must also be able to demonstrate relevant knowledge required to effectively perform task skills; task management skills; contingency management skills and job/role environment skills as outlined in elements and performance criteria, such as knowledge of:

- Cross cultural communication protocols
- Non-verbal communication strategies
- Communication techniques to maintain constructive interactions
- Barriers to communication

Essential skills:

It is critical that the candidate demonstrate the ability to:

- Provide evidence that all communication with clients and colleagues is appropriate to individual needs and the situation and promotes achievement of organisation objectives
- Use strategies to meet particular communication needs/difficulties
- Address individual issues in a timely way and in a manner which maintains the integrity of the individual
- Know when to provide referrals to conflict resolution and mediation

In addition, the candidate must be able to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the identified work role

These include the ability to:

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REQUIRED SKILLS AND KNOWLEDGE

- Apply a full range of communication techniques including:
  - reflective and active listening, respectful responding, empathy, feedback and rapport
  - addressing communication barriers through application of a range of strategies
  - recognition of non-verbal triggers
  - clarification of boundaries of work role
- Apply oral communication skills required to fulfil job roles as specified by the organisation/service:
  - skills in asking questions, providing clear information, listening to and understanding workplace instructions, and clarifying workplace instructions when necessary
  - service/organisation may require competence in English or community language, depending on client group

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate this unit of competency:

- The individual being assessed must provide evidence of specified essential knowledge as well as skills
- This unit will be most appropriately assessed in a work context or in simulated work environment and under the normal range of work conditions
- Assessment is recommended to be on more than one occasion and must include the range of clients who access the service

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EVIDENCE GUIDE

Access and equity considerations:

- All workers in community services should be aware of access, equity and human rights issues in relation to their own area of work
- All workers should develop their ability to work in a culturally diverse environment
- In recognition of particular issues facing Aboriginal and Torres Strait Islander communities, workers should be aware of cultural, historical and current issues impacting on Aboriginal and Torres Strait Islander people
- Assessors and trainers must take into account relevant access and equity issues, in particular relating to factors impacting on Aboriginal and/or Torres Strait Islander clients and communities

Context of and specific resources for assessment:

- This unit can be assessed independently, however holistic assessment practice with other community services units of competency is encouraged
- Resources required for assessment include access to relevant workplace or simulated realistic workplace setting where assessment may take place

Method of assessment:

- Assessment may include observation, questioning and evidence gathered from the workplace and/or simulated work environment, including written work

Range Statement

RANGE STATEMENT

The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.

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RANGE STATEMENT

Communicate effectively includes:	• Effective use of questioning, speaking, and listening and non-verbal communication techniques • Identifying and evaluating what is occurring within an interaction in a non-judgemental way • Making decisions about appropriate words, behaviour, posture • Using clarifying, summarising questions • Putting together a response that is culturally appropriate • Expressing an individual perspective • Expressing own philosophy, ideology and background and exploring the impact of this on the communication • Exploring and unpacking problems • Using active and reflective listening appropriately • Providing sufficient time to enable stories to be told • Providing summarising and reflective responses in conflict situations • Confirming that required information is accessed or message communicated
Non-verbal communication includes:	• Gestures • Posture • Facial expression
Interviews may include:	• Discussion of staffing issues • Routine information collection • Maintaining confidentiality • Evidential-based • Non disclosure • Disclosure

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RANGE STATEMENT

Established procedures may refer to:	• Commonwealth and State legislation • International conventions relating to the rights of individuals • Organisation policy and procedures • Relevant program standards • Duty of care and ethical practice
Presentation of information includes:	• Clarity • Appropriate sequencing • Delivery within an appropriate time • Utilising media to enhance presentation, if appropriate • Addressing audience needs
Opportunities will include:	• Allowing sufficient time to hear individual stories • Encouraging a full exploration of issues • Encouraging validation of individual issues
Additional parties may include:	• Trusted friends • Case workers • Family members • Nominated adults

Unit Sector(s)

Not Applicable

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CPPDSM4014A Market property for sale

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to market all types of property and businesses for sale. It includes planning, developing a marketing plan, preparing marketing materials, implementing marketing activities, and reviewing and reporting on marketing plans and activities.

The unit may form part of the licensing requirements for persons engaged in real estate activities in those States and Territories where these are regulated activities.

Application of the Unit

Application of the unit

This unit of competency supports the work of licensed real estate agents and real estate representatives involved in marketing all types of properties and businesses for sale.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills The required outcomes described in this unit of competency contain applicable facets of employability skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged, will assist in identifying employability skills requirements.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Develop marketing plan for property.	1.1 Potential ***buyer profile*** and benefits of effectively marketing property for sale are discussed with seller. 1.2 Strategies and timeframe for marketing property, including possible ***marketing activities***, are discussed with seller. 1.3 Costs of different marketing strategies and activities are discussed with seller. 1.4 ***Marketing plan*** for property is prepared and presented to seller in line with agency practice. 1.5 Marketing plan, including marketing activities and budget, is agreed with seller.
2 Check marketing materials.	2.1 Marketing materials that reflect agreed property and agency marketing plan are developed within agreed budget and timeframes. 2.2 Marketing materials are checked for accuracy and compliance with agency and legislative requirements.
3 Implement marketing activities.	3.1 ***Persons*** involved in marketing property for sale are briefed on their roles and responsibilities to ensure success of marketing activities. 3.2 Marketing activities are implemented in line with agreed marketing plan and budget. 3.3 Responsibility is assigned for ongoing ***monitoring of marketing activities***. 3.4 Marketing activities are implemented that comply with agency practice, ethical standards and legislative requirements. 3.5 Seller is kept ***informed of progress*** of marketing activities according to agency practice and legislative requirements.
4 Review and report on marketing activities and plan.	4.1 Marketing activities and plan are reviewed against aims and objectives of marketing plan. 4.2 Feedback on outcomes of marketing activities is sought using reliable methods and verifiable data according to agency practice. 4.3 Need for alternative marketing activities and adjustments to marketing plan are assessed in consultation with relevant people ***if property proves difficult to sell***. 4.4 Effectiveness of planning and marketing processes is assessed to identify possible improvements in future activities.

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ELEMENT	PERFORMANCE CRITERIA
	4.5 Costs and time lines are analysed to evaluate and improve future marketing initiatives.
	4.6 Conclusions are prepared from ***verifiable evidence*** and advice is provided on future marketing initiatives.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- ability to communicate with and relate to a range of people from diverse social, economic and cultural backgrounds and with varying physical and mental abilities
- analytical skills to interpret documents such as legislation, regulations and property documentation
- application of risk management strategies associated with advising clients on approaches to marketing properties for sale
- computing skills to access agency databases, send and receive emails and complete standard forms online
- decision making and problem solving skills to analyse situations and make ethical marketing decisions consistent with legislative and ethical requirements
- literacy skills to access and interpret a variety of texts, including legislation, regulations and rules of ethics; prepare general information and papers; prepare marketing materials and marketing plans; and complete standard forms
- negotiation skills to assist sellers to decide on marketing activities, budgets and timeframes
- numeracy skills to calculate and interpret data, such as costs of marketing activities and to ensure compliance with agreed marketing budgets
- planning, organising and scheduling skills to implement marketing plans
- research skills to identify and locate documents and information relating to preparing marketing plans for specified properties.

Required knowledge and understanding:

- ethical standards associated with marketing properties for sale
- factors considered in review of effectiveness of marketing strategy, plan, activities and materials
- factors influencing choice of marketing strategy
- marketing activities, including:
  - advertising, including print and electronic media

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REQUIRED SKILLS AND KNOWLEDGE

- agency property guides
- brochures
- direct marketing
- business-to-business marketing
- inspections
- mail-outs
- networking
- open house
- signboards
- seminars
- targeting markets by service type
- internet and online advertising, including web pages, virtual tours and online directories

- marketing budget
- marketing materials
- marketing plan
- marketing strategies for:
  - businesses
  - commercial properties
  - development properties, including subdivision and multi-unit sites
  - industrial properties
  - residential properties
  - retail properties
  - rural properties
- principles underpinning effective marketing materials
- relevant federal, and state or territory legislation and local government regulations relating to:
  - anti-discrimination and equal employment opportunity
  - consumer protection, fair trading and trade practices
  - employment and industrial relations
  - financial services
  - OHS
  - privacy
  - property sales
- risks and risk management strategies
- strategies if properties prove difficult to sell.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the Assessment Guidelines for this Training Package.

Overview of assessment

This unit of competency could be assessed through practical demonstration of marketing properties and businesses for sale. Targeted written (including alternative formats where necessary) or verbal questioning to assess the candidate's underpinning knowledge would provide additional supporting evidence of competence. The demonstration and questioning would include collecting evidence of the candidate's knowledge and application of ethical standards and relevant federal, and state or territory legislation and regulations. This assessment may be carried out in a simulated or workplace environment.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- implementing marketing activities for the sale of all types of property in line with agency practice, ethical standards and legislative requirements
- knowledge of agency practice, ethical standards and legislative requirements associated with marketing all types of property for sale
- planning and developing marketing plans for the sale of all types of property in line with agency practice, ethical standards and legislative requirements
- preparing marketing materials for the sale of all types of property in line with agency practice, ethical standards and legislative requirements
- reviewing and reporting on marketing activities associated with the sale of all types of businesses and property.

Context of and specific resources for assessment

Resource implications for assessment include:

- access to suitable simulated or real opportunities and resources to demonstrate competence
- assessment instruments that may include personal planner and assessment record book
- access to a registered provider of assessment services.

Where applicable, physical resources should include equipment modified for people with disabilities.

Access must be provided to appropriate learning and/or

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assessment support when required.

Assessment processes and techniques must be culturally appropriate, and appropriate to the language and literacy capacity of the candidate and the work being performed.

Validity and sufficiency of evidence require that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision of competence only taken at the point when the assessor has complete confidence in the person's competence
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence
- where assessment is for the purpose of recognition (RCC/RPL), the evidence provided will need to be current and show that it represents competency demonstrated over a period of time
- assessment can be through simulated project-based activity and must include evidence relating to each of the elements in this unit.

In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge. Questioning will be undertaken in such a manner as is appropriate to the language and literacy levels of the candidate and any cultural issues that may affect responses to the questions, and will reflect the requirements of the competency and the work being performed.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the performance criteria is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.

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Buyer profile may include:

- buyer's property requirements
- buying intentions
- financial capacity
- timeframe for purchase.

Marketing activities may include:

- advertising, including print and electronic media
- agency property guide
- brochures
- business-to-business marketing
- direct marketing
- inspections
- mail-outs
- networking
- open house
- seminars
- signboards
- targeting markets by service type
- internet and online advertising, including web pages, virtual tours and online directories.

Marketing plan may include:

- advertising and promotional materials prepared and scheduled
- advertising budget
- aims and objectives
- inspection of property by agency sales consultants
- inspections scheduled
- property listed in agency property guide
- prospective buyers contacted
- sale board prepared and ordered as per schedule
- seller advised of advertising and marketing procedures and costs
- target group identified for marketing plan
- timeframe for marketing activities
- seller advised on optimal property presentation
- web-based advertising arranged.

Persons may include:

- agency principal
- business broker
- licensed real estate agent
- real estate representative
- stock and station agent
- support staff.

Monitoring of marketing activities may include:

- enquiry records
- expenditure
- feedback from prospective buyers

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	• feedback from sales consultants • feedback from seller.
Information on progress may include:	• agency input into marketing of property • approaches and enquiries of interest regarding the property • costings • perception of levels of interest and worth of current marketing strategies • possible changes in marketing activities and plan • strategies used in marketing and promoting the property.
Strategies ***if property proves difficult to sell*** may include:	• revising advertising budget • modifying advertising copy and promotional materials • involving other agencies.
Verifiable evidence may include:	• checklists • notes • qualitative and quantitative data • records • testimonies.

Unit Sector(s)

Unit sector	Property development, sales and management

Competency field

Competency field	Real estate

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CPPDSM4022A Sell and finalise the sale of property by private treaty

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to sell and finalise the sale of all types of property by private treaty. It includes qualifying buyers, arranging for potential buyers to inspect listed properties, delivering effective sales presentations, submitting offers and negotiating property sale with sellers and buyers and maintaining communications with sellers and prospective buyers. It also includes monitoring the process between exchange of contracts and settlement for all types of property and businesses and preparing documentation for agency disbursements.

The unit does not include the sale of property by auction.

The unit may form part of the licensing requirements for persons engaged in real estate activities in those States and Territories where these are regulated activities.

Application of the Unit

Application of the unit

This unit of competency supports the work of licensed real estate agents and real estate representatives involved in selling and finalising the sale of all types of property by private treaty.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills The required outcomes described in this unit of competency contain applicable facets of employability skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged, will assist in identifying employability skills requirements.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Qualify buyer.	1.1 ***Enquiries from potential buyers*** regarding purchase of property are handled promptly to enable high quality service delivery according to agency requirements.
	1.2 ***Appropriate rapport*** is established with potential buyer.
	1.3 ***Buyer requirements*** are clarified and accurately assessed using ***appropriate interpersonal communication techniques***.
	1.4 ***Factors likely to influence the purchase of properties*** are identified and used to confirm buyer intentions.
	1.5 ***Customer due diligence*** is undertaken according to agency practice and legislative requirements.
	1.6 Potential buyers are provided with suitable information about available and prospective listings and assisted to find listing that best matches their requirements.
	1.7 Potential buyers are assisted in making a decision to view properties using information obtained from sellers and buyers.
	1.8 Qualified prospects are recorded to provide an opportunity to maximise future marketing activities.
2 Arrange property inspection for potential buyer.	2.1 Appointments are made for property inspections in line with agency practice, ethical standards and ***legislative requirements***.
	2.2 Preparations are made for property inspection in line with agency practice.
	2.3 ***Promotional material*** on the property is used to describe main sales features of the property.
	2.4 ***Effective questioning techniques*** are used to clarify buyer interest in the property.
	2.5 ***Records of inspections*** are accurately completed in line with agency practice.
3 Deliver effective sales presentation.	3.1 ***Factors affecting the successful conclusion of the sale*** are identified and addressed in the sales presentation.
	3.2 ***Key decision makers*** are identified to ensure that their needs and concerns are met in the sales presentation.
	3.3 Main features of property are matched to buyers' stated needs and motivation.
	3.4 Relevant legal and financial information is used to

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ELEMENT	PERFORMANCE CRITERIA
	support the sales presentation.
	3.5 Effective communication and ***presentation skills*** are used to create buyer interest and focus buyer attention on the property.
	3.6 Buyer is given time and space to evaluate property while time is used to maximum advantage to promote property.
	3.7 Buyer is encouraged to clarify key aspects of property before a decision is made to purchase property.
	3.8 Buyer questions are answered fully and honestly.
	3.9 Details of offer to purchase property submitted by buyer are confirmed and documented.
4 Submit offer and negotiate property sale.	4.1 Offer from buyer is submitted to seller in line with agency practice, ethical standards and legislative requirements.
	4.2 Professional agency advice is provided to seller that incorporates declared knowledge of buyer's motivation.
	4.3 Negotiations are conducted with buyer according to seller response to offer.
	4.4 Negotiations are conducted in a professional manner, including showing respect for seller and buyer in line with agency practice, ethical standards and legislative requirements.
	4.5 ***Effective negotiation techniques*** are used to persuade and reach agreement between seller and buyer.
	4.6 Alternative offers are discussed and their viability assessed.
	4.7 ***Effective techniques are used for dealing with conflict and breaking deadlocks*** where required.
	4.8 ***Effective techniques are used for closing sale***.
	4.9 Mutually agreed price and conditions of sale are established and confirmed with seller and buyer.
	4.10 Relevant ***sale of property documentation*** is explained to seller and buyer in line with agency and statutory requirements for finalisation of the property transaction.
	4.11 Documented, agreed price and conditions of sale are made accessible that provide an accurate record of agreement and meet agency and statutory requirements for finalisation of the property transaction.
5 Maintain	5.1 Seller confidence in agency marketing activities is

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ELEMENT	PERFORMANCE CRITERIA
communication with seller.	maintained through ongoing contact and correspondence. 5.2 Communication is diarised to provide an accurate and objective record of progress reports to seller.
6 Manage contract to settlement.	6.1 ***Settlement requirements*** are identified and checked with relevant parties to minimise misunderstanding or breaches of contract in line with agency practice and legislative requirements. 6.2 Requests from buyer to inspect property prior to settlement are facilitated in line with agency practice and legislative requirements. 6.3 Information on buyer and seller responsibilities with regard to building and content insurance prior to settlement is provided in line with agency practice and legislative requirements. 6.4 Procedures for holding and release of ***deposit moneys*** during the settlement period are implemented in line with agency policy and legislative requirements. 6.5 Settlement within the contract's legal framework is ensured by liaison with ***settlement agents and other assisting professionals*** representing the seller and buyer. 6.6 Progress of settlement agents and other assisting professionals is monitored in line with agency practice. 6.7 Contingency plans are prepared in consultation with relevant legal agents to avoid the possibility of one or more parties to the transaction being unable to fulfil contractual obligations. 6.8 Appropriate procedures are implemented if any party to the transaction is unable to fulfil contractual obligations. 6.9 Effective communication techniques are used in liaising with seller, buyer and other parties representing the seller and buyer through the settlement process.
7 Prepare documentation for agency disbursements.	7.1 Settlement financial transactions are checked for accuracy against contractual documentation, and agency fees are calculated and safeguarded during disbursement activities. 7.2 Authorised agency disbursements are obtained within contractual, agency and statutory requirements. 7.3 Financial systems are updated to reflect authorised

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ELEMENT	PERFORMANCE CRITERIA
	transactions.
	7.4 Agency fees are calculated and safeguarded during disbursement activities.
	7.5 Due and proper attention is paid to obtaining required authorisations, signatures and identifications prior to disbursement.
8 Decide on future contacts with prospects.	8.1 Nature of future contacts with prospects is assessed in the light of likely agency-client interaction to a given point in time.
	8.2 Business correspondence records are held on file to provide justification for the continuation or termination of contract, and are communicated without prejudice to the parties involved.
9 Maintain client relationships.	9.1 Future business relations are established by mutual evaluation of seller and buyer satisfaction with services provided.
	9.2 Business records and databases are updated to facilitate networking and informed marketing strategy planning.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- ability to communicate with and relate to a range of people from diverse social, economic and cultural backgrounds and with varying physical and mental abilities on matters associated with the sale of property
- analytical skills to interpret documents such as contracts, legislation and regulations
- application of risk management strategies associated with the sale of property
- computing skills to access the internet and web pages, prepare and complete online forms, lodge electronic documents and search online databases
- decision making and problem solving skills to analyse situations and make decisions consistent with legislative and ethical requirements associated with the sale of property
- literacy skills to access and interpret a variety of texts, including legislation, regulations and contracts; prepare general information and papers; prepare formal

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REQUIRED SKILLS AND KNOWLEDGE

and informal letters, reports and applications; and complete standard and statutory forms

- negotiation skills to assist sellers and buyers to reach agreement on price and conditions of sale of property
- numeracy skills to perform calculations associated with property sales
- planning, organising and scheduling skills to make appointments with sellers and buyers in the process of selling property
- research skills to identify and locate documents and information relating to sale of property.

Required knowledge and understanding:

- agency disbursements, including:
  - authorisations, signatures and identifications that must be obtained prior to disbursement
  - calculation and protection of agency fees during disbursement activities
  - documentation for agency disbursements
  - financial transactions that take place at settlement
- circumstances in which contracts are void, voidable or unenforceable, including:
  - illegality
  - lack of capacity
  - misrepresentation
  - mistake
- consumer protection principles that impact on the sale of property, including:
  - cooling off provisions
  - false representations and misleading conduct in relation to the sale of land
  - impact of consumer protection legislation on contracts
  - insurance provisions
  - penalties and remedies for breaches
  - protection offered for consumers
  - rights and obligations of estate agents
  - secret commissions
- contract construction principles, including:
  - acceptance
  - consideration
  - implied matters in contracts for sale of property
  - negligence
  - offer
- contracts for sale of property, including:
  - chattels and fixtures
  - contract requirements for special circumstances, such as providing finance and

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REQUIRED SKILLS AND KNOWLEDGE

    - sale of units and flats
    - defects in property
    - defects in title
    - effect of acceptance of title
    - prescribed or permitted forms
    - requisitions on title
    - special conditions
- deposit funds, including:
    - capacity in which an estate agent holds deposit moneys
    - circumstances in which deposit moneys may be released by the estate agent to the seller
    - procedures an estate agent must follow when he or she receives deposit moneys from a buyer
- ethical and conduct standards
- general legal principles that affect property law relating to the sale of property, including:
    - adverse possession
    - contracts
    - easements
    - fee simple and life estates
    - general law system and the Torrens system of title
    - mortgages
    - real and personal property
    - restrictive covenants
    - types of interest in land
- insurance
- marketing aids
- methods of sale, including:
    - auction
    - off the plan
    - private treaty
    - reverse auction
    - set sale
    - specialised properties
    - tender
- negotiation techniques
- property inspections
- property sales, including:
    - after-sales procedures

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REQUIRED SKILLS AND KNOWLEDGE

- agency and statutory documentation
- sales presentation techniques
- qualifying buyers
- relevant federal, and state or territory legislation and local government regulations relating to:
  - anti-discrimination and equal employment opportunity
  - anti-money laundering
  - consumer protection, fair trading and trade practices
  - employment and industrial relations
  - financial services
  - OHS
  - privacy
  - property sales
- risks and risk management strategies
- settlement, including:
  - buyer's rights to inspect property prior to settlement
  - contingencies that may emerge prior to settlement and the actions that can be taken to avoid one or more parties being unable to fulfil contractual obligations
  - forms prepared at settlement
  - procedure for settling the sale of property
  - responsibilities of sellers and buyers
  - responsibility of seller and buyer with regard to building and content insurance prior to settlement
  - rights of sellers and buyers if either party is unable to settle on the due date
- techniques for identifying needs and motivation of buyers
- trust accounting in real estate.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the Assessment Guidelines for this Training Package.

Overview of assessment This unit of competency could be assessed through practical demonstration of selling different types of property using general real estate sales procedures and techniques in line with agency practice, ethical standards and legislative requirements affecting the sale of property. Targeted written (including alternative formats where necessary) or verbal

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questioning to assess the candidate's underpinning knowledge would provide additional supporting evidence of competence. The demonstration and questioning would include collecting evidence of the candidate's knowledge and application of ethical standards and relevant federal, and state or territory legislation and regulations. This assessment may be carried out in a simulated or workplace environment.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- arranging and conducting property inspections for potential buyers
- completing standard and statutory documentation associated with the sale of property
- knowledge and application of approaches for qualifying buyers
- knowledge of agency practice, ethical standards and legislative requirements affecting the sale of property and requirements associated with the transfer of ownership required for the legal sale of all types of property and businesses
- knowledge of consumer protection principles that impact on the sale of property
- maintaining business records associated with the sale of property
- maintaining communications with sellers and buyers throughout the sale process
- negotiating the sale of property with sellers and buyers
- planning and delivering effective sales presentations to facilitate the sale of property
- knowledge of agency practice and legislative requirements associated with agency disbursements
- managing contracts for sale of property to settlement
- monitoring the lodgement of documents for the correct transfer of ownership required for a legal sale of all types of property and businesses
- preparing documentation for agency disbursements.

Context of and specific resources for assessment

Resource implications for assessment include:

- access to suitable simulated or real opportunities and resources to demonstrate competence
- assessment instruments that may include personal planner and assessment record book
- access to a registered provider of assessment services.

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Where applicable, physical resources should include equipment modified for people with disabilities.

Access must be provided to appropriate learning and/or assessment support when required.

Assessment processes and techniques must be culturally appropriate, and appropriate to the language and literacy capacity of the candidate and the work being performed.

Validity and sufficiency of evidence require that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision of competence only taken at the point when the assessor has complete confidence in the person's competence
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence
- where assessment is for the purpose of recognition (RCC/RPL), the evidence provided will need to be current and show that it represents competency demonstrated over a period of time
- assessment can be through simulated project-based activity and must include evidence relating to each of the elements in this unit.

In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge. Questioning will be undertaken in such a manner as is appropriate to the language and literacy levels of the candidate and any cultural issues that may affect responses to the questions, and will reflect the requirements of the competency and the work being performed.

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Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the performance criteria is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.

Enquiries from potential buyers may be received through:

- email
- inspections
- office
- open houses
- referral
- telephone
- website.

Appropriate rapport relates to use of techniques that:

- establish and build confidence and trust in the agency and its representatives
- make the buyer feel valued
- promote and maintain an effective relationship with the buyer.

Buyer requirements may include:

- access to transport and facilities
- finance
- location
- price
- purpose of purchase, such as for:
  - business
  - holiday
  - investment
  - private residence
- settlement period
- size of property
- style of property.

Appropriate interpersonal communication techniques may include:

- active listening
- providing an opportunity for the seller or buyer to clarify their understanding of the sales process
- soft questioning and seeking feedback from sellers or buyers to confirm own understanding of their needs and expectations
- summarising and paraphrasing to check understanding of seller or buyer message

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	• using appropriate body language.
Factors likely to influence the purchase of properties may include:	• buying intentions • capacity to purchase • financial limits • motives • needs • preferences.
Customer due diligence may include:	• availability of finance • identity verification • record keeping requirements • reporting requirements.

Legislative requirements may include:	• relevant federal, and state or territory legislation and local government regulations relating to:
	  • anti-discrimination and equal employment opportunity
	  • anti-money laundering
	  • consumer protection, fair trading and trade practices
	  • employment and industrial relations
	  • financial services
	  • OHS
	  • privacy
	  • property sales.

Promotional materials may include:	• agent and agency profile • brochures and pamphlets • posters • property descriptions • web page entry.
Effective questioning techniques may include:	• active listening • clear questions • different question types • reflection • using silences.
Records of inspection may include:	• buyer's reaction to property • buyer requirements • name and contact details of potential buyers.
Factors affecting the successful conclusion of a sale may include:	• area and environment in which the property is located • availability of comparable properties • marketing preferences of seller • circumstances of seller and buyer • professional skills and resources of agent

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- state of the market for type of property
- type and condition of property.

Key decision makers may include:

- business associates
- buyer's agent
- family members and friends of buyer
- providers of professional advice, including:
  - accountants
  - building advisers
  - financial advisers
  - legal representatives
  - property advisers
- spouse or partner.

Presentation skills may include:

- active listening
- appearance
- body language
- use of information technology, such as website, virtual tours and online databases
- use of support and promotional materials
- voice.

Effective negotiation techniques may include:

- analytical skills
- listening techniques
- non-verbal communication skills
- personal attributes
- presentation techniques
- questioning techniques
- speaking skills.

Effective techniques for dealing with conflict and breaking deadlocks may include:

- calling in a third party
- clarifying the positions of both parties
- deferring the decision
- preparing a compromise
- restating the position
- summarising the progress to date.

Effective techniques for closing sale may include:

- alternate option close
- assumption close
- competition close
- customer close
- deal or concession close
- direct close
- indirect close
- summary-of-benefits close
- time-driven close.

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Sale of property documentation may include:

- contract of sale or real estate, contract note and contract for the sale of businesses
- declaration of selling agent
- financial statement to buyer
- receipt for deposit
- vendor's statement and trading statement.

Settlement requirements may include:

- buyer settlement responsibilities, including:
  - anything the new lender requires, such as a notice of acquisition or a disbursement order
  - bank cheques for the balance of purchase money, plus or minus adjustments
- seller settlement responsibilities, including:
  - any other documents necessary to provide a clear title to the buyer, such as discharge of mortgage, withdrawal of caveats change of name declaration
  - disconnection of services, such as water, gas, electricity and telephone
  - keys
  - notify rating and taxing authorities of sale
  - other services
  - title
  - transfer of land
  - value of land and chattels.

Deposit moneys may refer to:

- capacity of agent to hold
- capacity of agent to release to seller
- procedures for receipt and banking.

Settlement agents and other assisting professionals may include:

- accountants
- conveyancers
- financiers and financial institutions
- landlords and managing agents
- legal advisers
- licensed settlement agents.

Unit Sector(s)

Unit sector Property development, sales and management

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Competency field

Competency field Real estate

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CPPDSM5022A Implement asset management plan

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to plan for the management of assets. It requires the ability to implement effective strategies to manage the operational, resource and maintenance needs of assets and to review and evaluate those strategies.

The unit may form part of the licensing requirements for persons working in the property industry, including in the real estate, business broking, stock and station agency and property operations and development sectors, in those States and Territories where these are regulated activities.

Application of the Unit

Application of the unit

This unit of competency supports the work of those involved in planning for the management of assets.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills The required outcomes described in this unit of competency contain applicable facets of employability skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged, will assist in identifying employability skills requirements.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Establish performance needs of assets.	1.1 ***Asset*** performance needs are established in consultation with ***relevant people*** according to ***organisational requirements***.
	1.2 ***Risk*** assessment is conducted on asset management outcomes according to organisational and ***legislative requirements***.
	1.3 ***Industry benchmarks*** are analysed to determine expected ***asset performance*** in varying conditions according to organisational requirements.
	1.4 Applicable legislation is interpreted in order to establish user, contractual and legislative requirements for asset performance.
	1.5 Specifications, conditions and manufacturer requirements for asset maintenance and operation are identified for incorporation into plan.
2 Prepare asset management plan.	2.1 Asset management plan is prepared that facilitates achievement of identified aims and objectives.
	2.2 Operational and maintenance ***schedule*** detailing a range of activities and time lines is incorporated into asset management plan.
	2.3 Asset management plan is presented to ***client*** for review according to organisational requirements.
	2.4 Quality assurance goals and strategies related to implementation of the plan are communicated using established ***communication channels***.
	2.5 Monitoring and reporting arrangements for asset management plan are established and documented in line with client requirements.
	2.6 Financial, physical and human resource requirements are identified and arranged according to asset management plan and organisational requirements.
	2.7 Roles and responsibilities for establishing and maintaining ***asset register*** are identified and documented according to client and legislative requirements.
3 Review and evaluate asset management plan.	3.1 ***Maintenance strategies*** and plans are reviewed and evaluated in consultation with client and relevant people using appropriate ***communication techniques***.
	3.2 Systematic review processes and established ***evaluation methods*** are identified and used to assess planning processes and outcomes.
	3.3 Evaluation results are prepared in required format, style

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ELEMENT	PERFORMANCE CRITERIA
	and structure and presented to relevant people within agreed timeframes.
	3.4 Recommendations for improvement of plan are presented to relevant people according to organisational procedures.
	3.5 ***Business equipment and technology*** are used to securely maintain documentation according to legislative and organisational procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- analytical skills to interpret documentation, analyse risk, estimate costings and budget needs, and review and evaluate plan
- communication skills to negotiate and consult with relevant people
- computing skills to access the internet and web pages, prepare and complete online forms, lodge electronic documents and search online databases
- interpersonal skills to relate to people from a range of social, cultural and ethnic backgrounds and varying physical and mental abilities
- literacy skills to interpret written and oral information
- organisational skills to schedule and meet time lines and client requirements, organise resource and support processes, and plan and document strategies to manage assets
- technical skills to develop schedules and document plans.

Required knowledge and understanding:

- building codes and relevant Australian standards
- building control legislation
- building practices in relevant property types
- building services and operation methods and practices
- customer needs and preferences for different property types
- industry performance benchmarks
- limitations of work role, responsibility and professional abilities
- maintenance procedures, including vendor specifications
- monitoring and evaluation systems
- OHS issues and requirements

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REQUIRED SKILLS AND KNOWLEDGE

- organisational and professional procedures, ethical practices and business standards
- relevant federal and state or territory legislation and local government regulations related to:
  - anti-discrimination
  - consumer protection
  - environmental issues
  - equal employment opportunity (EEO)
  - financial probity
  - franchise and business structures
  - industrial relations
  - OHS
  - privacy
  - property sales, leasing and management
- standards for building equipment operation.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the Assessment Guidelines for this Training Package.

Overview of assessment	This unit of competency could be assessed through practical demonstration of planning for the management of assets. Targeted written (including alternative formats where necessary) or verbal questioning to assess the candidate's underpinning knowledge would provide additional supporting evidence of competence. The demonstration and questioning would include collecting evidence of the candidate's knowledge and application of ethical standards and relevant federal, and state or territory legislation and regulations. This assessment may be carried out in a simulated or workplace environment.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of: • determining asset performance needs using industry benchmarks and consideration of risk • documenting resource and support arrangements, incorporating expected costs, and processes for

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development and maintenance of an asset register and operational and maintenance schedules
- evaluating the asset management plan through consultation with interested parties
- knowledge of organisation's practices, ethical standards and legislative requirements associated with planning for the management of assets
- preparing a detailed asset management plan which incorporates strategies for risk management, resource needs, monitoring and reporting arrangements and quality assurance.

Context of and specific resources for assessment

Resource implications for assessment include:

- a registered provider of assessment services
- assessment materials and tools
- candidate special requirements
- competency standards
- cost and time considerations
- suitable assessment venue and equipment.

Where applicable, physical resources should include equipment modified for people with disabilities.

Access must be provided to appropriate learning and/or assessment support when required.

Assessment processes and techniques must be culturally appropriate, and appropriate to the language and literacy capacity of the candidate and the work being performed.

Validity and sufficiency of evidence require that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision of competence only taken at the point when the assessor has complete confidence in the person's competence
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence
- where assessment is for the purpose of recognition (RCC/RPL), the evidence provided will need to be current and show that it represents competency demonstrated over a period of time

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- assessment can be through simulated project-based activity and must include evidence relating to each of the elements in this unit.

In all cases activity and must include evidence relating to each of the where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge. Questioning will be undertaken in such a manner as is appropriate to the language and literacy levels of the candidate and any cultural issues that may affect responses to the questions, and will reflect the requirements of the competency and the work being performed.

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Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the performance criteria is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.

Assets may be static or dynamic and include:

- buildings
- business and marketing contracts
- equipment
- furniture
- goodwill
- land
- property
- vehicles.

Relevant people may include:

- agents
- clients
- designated OHS representatives
- emergency personnel
- engineers and technicians
- government personnel
- installers
- legal representatives
- management and colleagues
- members of industry associations
- property owners
- site personnel
- subcontractors
- technical experts
- tenants.

Organisational requirements may be outlined and reflected in:

- access and equity principles and practice guidelines
- business and performance plans
- complaint and dispute resolution procedures
- goals, objectives, plans, systems and processes
- legal and ethical requirements and codes of practice
- mission statements and strategic plans
- OHS policies, procedures and programs
- policies and procedures in relation to client service
- quality and continuous improvement processes and

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	standards • quality assurance and procedure manuals.
Risk may relate to:	• industry special risks • loss of profits • machinery malfunction • OHS • public liability • trade practices issues.

Legislative requirements may be outlined and reflected in:	• Australian standards, and quality assurance and certification requirements
	• award and enterprise agreements
	• codes of practice covering the market sector and industry, financial transactions, taxation, environment, construction, land use, native title, zoning, utilities use (water, gas and electricity), and contract or common law
	• environmental and zoning laws affecting access security, access and property use
	• general duty of care to clients
	• home building requirements
	• local regulations and by-laws
	• privacy laws applying to owners, contractors and tenants
	• relevant federal, and state or territory legislation that affects organisational operation, including:
	  • anti-discrimination and diversity
	  • environmental issues
	  • EEO
	  • industrial relations
	  • OHS
	• strata, community and company titles
	• tenancy agreements
	• trade practices laws and guidelines.

Industry benchmarks may include:	• discounted cash flow • employment rates • industry association performance index • inflation rate • internal rate of return • life cycle costing • published vacancy factors • tenancy mix.
Asset performance criteria may include:	• age • condition assessment

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- cost
- depreciation
- down time
- emergency operation and backup
- functionality
- life span
- maintenance requirements and cost
- replacement
- security
- service levels.

Schedules may be:

- charts
- computerised
- paper-based
- prepared for daily, weekly, monthly or annual timeframes
- to-do lists
- wall-mounted planning boards
- work diary.

Clients may include:

- building supervisors
- company management
- fund managers
- fund providers
- government and legal instruments or agencies
- institutions
- insurers
- internal and external property groups
- legal advisers
- private investors
- property agents
- property owners
- risk assessors.

Communication channels may include:

- direct line supervision paths
- lateral supervision paths
- organisational communication protocols and procedures
- organisational networks.

Asset register may include:

- air conditioning
- cleaning
- heating
- security systems
- telecommunications systems
- utilities
- ventilation

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- vertical services
- waste management.

Maintenance strategies may relate to:

- cleaning
- electrical
- emergency lighting
- evacuation
- fire lighting
- garden
- housekeeping
- painting
- pests
- plumbing
- sanitary disposal
- security
- vertical movement
- waste disposal
- weather proofing.

Communication techniques may include:

- active listening
- clear presentation of options
- consultation methods
- culturally inclusive and sensitive engagement techniques
- questioning to clarify and confirm understanding
- seeking feedback
- two-way interaction
- using language and concepts appropriate to cultural differences
- verbal or non-verbal language.

Evaluation methods could be qualitative or quantitative and may include:

- checklists
- cost data analysis
- expert and peer review
- interviews
- observation
- questionnaires
- review of quality assurance data.

Business equipment and technology may include:

- data storage devices
- email
- facsimile machines
- internet, extranet and intranet
- photocopiers
- printers
- scanners

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- software applications, such as databases and word applications
- work computers.

Unit Sector(s)

Unit sector Property development, sales and management

Competency field

Competency field Property operations and development

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CPPDSM6002A Conduct a property investment feasibility study

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to conduct an assessment of investment feasibility. It requires the ability to identify objectives and techniques to undertake the study, use valid and reliable research techniques to analyse information, and report study findings and conclusions.

The unit may form part of the licensing requirements for persons engaged in property operations and development in those States and Territories where these activities are regulated.

Application of the Unit

Application of the unit

This unit of competency supports the work of those involved in conducting assessments of investment feasibility.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills The required outcomes described in this unit of competency contain applicable facets of employability skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged, will assist in identifying employability skills requirements.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Establish study requirements.	1.1 Aims and objectives of ***investment*** feasibility study are clearly established according to ***client*** and ***organisational requirements***.
	1.2 Study objectives and time lines are negotiated and agreed in consultation with ***relevant people***.
	1.3 ***Relevant documentation*** and ***legislative requirements*** are gathered and reviewed to identify critical requirements of the study.
	1.4 Initial comparisons with similar properties are made to allow effective comparison with ***client expectations*** according to organisational requirements.
	1.5 Situations requiring ***specialist advice*** are identified and support is sought as required according to organisational requirements.
2 Access relevant information.	2.1 Relevant ***information*** is gathered and organised in a format suitable for ***analysis*** and interpretation.
	2.2 Market information is accessed and evaluated in terms of validity, reliability and relevance according to identified analysis requirements.
	2.3 Relevant people are consulted to gather additional information using appropriate ***communication techniques***.
	2.4 Environment is scanned to identify and assess factors that may impact on study according to organisational requirements.
	2.5 Reliable methods for gathering information are used according to organisational requirements, making efficient use of time and resources.
3 Analyse information.	3.1 Quantitative and qualitative analysis is undertaken of ***comparative market data*** using standard financial analysis techniques.
	3.2 Economic trends and market developments are identified and evaluated in terms of potential implications and impact on study objectives.
	3.3 ***Factors*** increasing or diminishing investment ***risk*** are identified, analysed and discussed with client.
	3.4 Sound reasoning is applied to ensure consistency of interpretations based on available information.
4 Formulate investment scenarios.	4.1 Alternative investment scenarios are developed to meet study requirements according to organisational requirements.

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ELEMENT	PERFORMANCE CRITERIA
	4.2 ***Consultative processes*** are used to obtain views of industry experts as required.
	4.3 Scenarios are verified against prescribed criteria and analysed to minimise subjective assessment.
	4.4 Sensitivity analysis is performed on data to identify degree of convergence within identified industry and market ***benchmarks***.
	4.5 Property trends and ***market conditions*** are identified and evaluated against study requirements.
5 Document feasibility study.	5.1 Feasibility study is presented in appropriate format, style and structure using suitable ***business equipment and technology***.
	5.2 Report is prepared and distributed to relevant people within agreed timeframes according to organisational requirements.
	5.3 Conclusions are documented that are verifiable, current and sufficiently detailed to meet identified client and organisational requirements.
	5.4 Information is securely maintained with due regard to client confidentiality, and legislative and organisational requirements.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- communication skills to negotiate client requirements and consult with industry experts and other relevant people
- computing skills to access the internet and web pages, prepare and complete online forms, lodge electronic documents and search online databases
- interpersonal skills to relate to people from a range of social, cultural and ethnic backgrounds and varying physical and mental abilities
- literacy skills to interpret written and oral information
- organisational skills to plan and schedule time lines and objectives and to manage project processes
- problem solving skills to determine factors that may affect property markets and evaluate risk

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REQUIRED SKILLS AND KNOWLEDGE

- research skills to source, analyse and interpret property and market information
- technical skills to use software for planning and scheduling tasks, use financial and assessment software and spreadsheets, and access market information.

Required knowledge and understanding:

- alternative property uses
- building control legislation, codes and relevant Australian standards
- business and industry property networks
- current property and investment market
- investment risk factors and relationship to return expectations
- limitations of work role, responsibility and professional abilities
- OHS issues and requirements
- organisational and professional procedures, ethical practices and business standards
- project assessment methods
- relevant federal and state or territory legislation and local government regulations related to:
  - anti-discrimination
  - consumer protection
  - environmental issues
  - equal employment opportunity (EEO)
  - financial probity
  - franchise and business structures
  - industrial relations
  - OHS
  - privacy
  - property sales, leasing and management
- sources of industry and market information
- types of property markets
- value management.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the Assessment Guidelines for this Training Package.

Overview of assessment This unit of competency could be assessed through practical demonstration of conducting an assessment of

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investment feasibility. Targeted written (including alternative formats where necessary) or verbal questioning to assess the candidate's underpinning knowledge would provide additional supporting evidence of competence. The demonstration and questioning would include collecting evidence of the candidate's knowledge and application of ethical standards and relevant federal, and state or territory legislation and regulations. This assessment may be carried out in a simulated or workplace environment.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- analysing market information to identify economic trends, market developments and risk factors
- documenting and presenting investment feasibility study using appropriate business equipment and technology
- formulating investment scenarios against industry benchmarks
- knowledge of organisation's practices, ethical standards and legislative requirements associated with conducting an assessment of investment feasibility
- sourcing documentation and information through consultation to establish study aims and objectives, and make initial comparisons of similar properties
- sourcing market and environmental information to identify factors affecting study.

Context of and specific resources for assessment

Resource implications for assessment include:

- a registered provider of assessment services
- assessment materials and tools
- candidate special requirements
- competency standards
- cost and time considerations
- suitable assessment venue and equipment
- workplace documentation.

Where applicable, physical resources should include equipment modified for people with disabilities.

Access must be provided to appropriate learning and/or assessment support when required.

Assessment processes and techniques must be culturally appropriate, and appropriate to the language and literacy capacity of the candidate and the work being performed.

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Validity and sufficiency of evidence require that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision of competence only taken at the point when the assessor has complete confidence in the person's competence
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence
- where assessment is for the purpose of recognition (RCC/RPL), the evidence provided will need to be current and show that it represents competency demonstrated over a period of time
- assessment can be through simulated project-based activity and must include evidence relating to each of the elements in this unit.

In all cases activity and must include evidence relating to each of the where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge. Questioning will be undertaken in such a manner as is appropriate to the language and literacy levels of the candidate and any cultural issues that may affect responses to the questions, and will reflect the requirements of the competency and the work being performed.

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Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the performance criteria is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.

Investment may relate to:

- concepts and plans
- strategies and placement of capital in property for investment
- productive use of property and assets
- customer service outcomes.

Clients may include:

- financial institutions
- fund managers
- individuals
- internal and external property groups
- investment organisations.

Organisational requirements may be outlined and reflected in:

- access and equity principles and practice guidelines
- business and performance plans
- complaint and dispute resolution procedures
- goals, objectives, plans, systems and processes
- legal and ethical requirements and codes of practice
- mission statements and strategic plans
- OHS policies, procedures and programs
- policies and procedures in relation to client service
- quality and continuous improvement processes and standards
- quality assurance and procedure manuals.

Relevant people may include:

- accountants
- agents
- clients
- government personnel
- interested parties
- legal representatives
- management and colleagues
- members of industry associations
- taxation specialists.

Relevant documentation may relate to:

- building codes
- current and planned property or site developments

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- deposited, survey and other plans and maps
- depreciation schedules
- land title and zoning
- leasing rates
- legal status
- management policy and procedures
- marketing services
- performance of comparable properties
- permits
- rates notices
- sales information
- taxation papers
- tenancy and other contracts or leases.

Legislative requirements may be outlined and reflected in:

- Australian standards
- general duty of care to clients
- home building requirements
- privacy requirements
- relevant federal, and state or territory legislation that affects organisational operation, including:
  - anti-discrimination and diversity
  - environmental issues
  - EEO
  - industrial relations
  - OHS
- relevant industry codes of practice covering the market sector and industry, financial transactions, taxation, environment, construction, land use, native title, zoning, utilities use (water, gas and electricity), and contract or common law
- strata, community and company titles
- tenancy agreements
- trade practices laws and guidelines.

Client expectations may relate to:

- immediate capital gains
- long-term capital gains.

Specialist advice may be sought from:

- architects
- bankers and financiers
- developers
- investment consultants
- land economists
- members of industry associations
- planners
- real estate agents

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	• solicitors • taxation and accounting practitioners • valuers.
Information sources may include:	• consultants • industry and organisational databases • information services • press clippings • published industry data, including industry indices • third parties • trade journals.
Analysis may include:	• computer modeling • examination of cash flows and other financial projections • examination of collected data • quantitative and qualitative analysis • probability analysis • time series recognition.
Communication techniques may include:	• active listening • clear presentation of options • consultation methods • culturally inclusive and sensitive engagement techniques • questioning to clarify and confirm understanding • seeking feedback • two-way interaction • using language and concepts appropriate to cultural differences • verbal or non-verbal language.
Comparative market data may include:	• best practice information • national and international benchmarking • inter-organisation comparison data.
Factors that may influence complexity of feasibility study may include:	• constraints on use • existing land use and ownership • government zoning and restrictions • project financing • staging of investment or development • structure of leases • type and number of tenants.
Risk may relate to:	• asset allocation and investment spread • borrowing risk • gearing • economics

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- lifestyle choices
- market and property sector risks, including:
  - fluctuations in economic cycle
  - interest rates
  - stock market
- organisational risk
- risk factors and client return expectations
- volatility of income and capital.

Consultative processes may include:

- face-to-face meetings
- telephone, facsimile and written communication.

Benchmarks may include:

- building operational costs
- business strategy parameters
- economic parameters
- financial constraints
- historical operational costs
- industry published building occupation data
- market expectations
- research data
- statutory costs.

Market conditions may relate to:

- availability of alternatives
- business confidence
- economic conditions
- level of competition.

Business equipment and technology may include:

- computers
- data storage devices
- email
- facsimile machines
- internet, extranet and intranet
- photocopiers
- printers
- scanners
- software applications.

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Unit Sector(s)

Unit sector Property development, sales and management

Competency field

Competency field Property operations and development

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CPPDSM6008A Develop strategic facilities management plan

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to develop and implement a strategic facilities management plan that is consistent and appropriate. It requires the ability to measure the effectiveness of the facilities management plan using a variety of review and evaluation methods and to modify and implement corrective action strategies.

The unit may form part of the licensing requirements for persons working in the property industry, including in the real estate, business broking, stock and station agency and property operations and development sectors, in those States and Territories where these are regulated activities.

Application of the Unit

Application of the unit

This unit of competency supports the work of those involved in developing and implementing strategic facilities management plans.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills The required outcomes described in this unit of competency contain applicable facets of employability skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged, will assist in identifying employability skills requirements.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Establish facilities management requirements.	1.1 ***Facilities*** management performance needs are determined and confirmed as required in consultation with ***relevant people***.
	1.2 Risk assessment of facilities management outcomes is conducted and assessed according to industry and organisational policies and procedures.
	1.3 Relevant ***industry benchmarks*** are analysed to assess expected performance of ***assets*** in varying market conditions.
	1.4 Applicable industry, ***organisational and legislative requirements*** are interpreted to establish user, contractual and legal compliance for facilities performance.
2 Prepare plan.	2.1 ***Facilities management plan*** including aims and objectives is prepared in appropriate format for dissemination to relevant people.
	2.2 ***Quality assurance goals and strategies*** are established according to facilities management plan.
	2.3 Monitoring and reporting arrangements for facilities management plan are determined in line with client requirements.
	2.4 ***Life cycle analysis*** is undertaken and capital investment strategies are planned.
3 Organise resources and support processes.	3.1 Financial, physical and human resource requirements are organised according to facilities management plan.
	3.2 ***Information relating to implementation of facilities management plan*** is distributed using established ***communication channels***.
	3.3 Reliable management methods are used, making efficient use of time and resources.
	3.4 ***Roles and responsibilities*** associated with implementation of facilities management plan are clearly defined and documented.
4 Review, evaluate and modify facilities management plan.	4.1 Facilities management plan is reviewed and evaluated in consultation with relevant people using appropriate ***feedback strategies***.
	4.2 Systematic review processes are established and suitable ***evaluation methods*** used to evaluate facilities management plan outcomes.
	4.3 Evaluation results are reviewed and recommendations for modification of plan and corrective actions are

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ELEMENT	PERFORMANCE CRITERIA
	incorporated as required into facilities management plan.
	4.4 Information is securely maintained with due regard to client confidentiality, and legislative and organisational requirements.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- analytical skills to interpret documentation, evaluate plan, analyse risk and estimate costings and budget needs
- communication skills to include relevant people in the planning process, discuss issues that may impact on others and receive feedback
- computing skills to access the internet and web pages, prepare and complete online forms, lodge electronic documents and search online databases
- interpersonal skills to obtain feedback that enables a review and evaluation of plan and to relate to people from a range of social, cultural and ethnic backgrounds and varying physical and mental abilities
- leadership skills to take a leading role in a variety of situations and pursue new challenges and opportunities
- literacy skills to access and interpret relevant information and prepare required documentation and information for those involved in implementation activities
- problem solving skills to identify potential barriers to implementation of the plan and establish contingencies
- research skills to collect reliable and valid information and match forecasting models and techniques with specific asset or facility requirements
- technical skills to design facilities or asset management plan, schedule tasks and report outcomes.

Required knowledge and understanding:

- building services and operation methods and practices
- financial analysis and forecasting principles
- impact analysis and investment scenario planning
- industry benchmarks for maintenance procedures
- industry performance benchmarks, including use and application of value analysis and benchmarking techniques
- long-range and annual facility planning techniques and practices

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REQUIRED SKILLS AND KNOWLEDGE

- organisational and professional procedures, ethical practices and business standards
- organisational quality systems, such as recording systems and strategic planning processes
- principles and practices of performance measurement, including review and evaluation procedures, processes and techniques
- principles and processes of objective setting
- relevant federal and state or territory legislation and local government regulations related to:
  - anti-discrimination
  - consumer protection
  - environmental issues
  - equal employment opportunity (EEO)
  - financial probity
  - franchise and business structures
  - industrial relations
  - OHS
  - privacy
  - property sales, leasing and management.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the Assessment Guidelines for this Training Package.

Overview of assessment	This unit of competency could be assessed through practical demonstration of developing and implementing a facilities management plan. Targeted written (including alternative formats where necessary) or verbal questioning to assess the candidate's underpinning knowledge would provide additional supporting evidence of competence. The demonstration and questioning would include collecting evidence of the candidate's knowledge and application of ethical standards and relevant federal, and state or territory legislation and regulations. This assessment may be carried out in a simulated or workplace environment.
Critical aspects for assessment and evidence required to demonstrate	A person who demonstrates competency in this unit must be able to provide evidence of:

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competency in this unit

- conducting a life cycle assessment and planning appropriate investment and disposal strategies for incorporation into facilities management plan
- determining facilities and asset management requirements using industry benchmarks and risk assessment strategies
- evaluating the facilities management plan and making recommendations for immediate action or modification of the plan
- identifying resource requirements, communicating roles and responsibilities and designing an implementation strategy for the plan
- knowledge of organisation's practices, ethical standards and legislative requirements associated with developing and implementing facilities management plans
- preparing a facilities management plan incorporating quality systems and reporting procedures.

Context of and specific resources for assessment

Resource implications for assessment include:

- a registered provider of assessment services
- assessment materials and tools
- candidate special requirements
- competency standards
- cost and time considerations
- suitable assessment venue and equipment
- workplace documentation.

Where applicable, physical resources should include equipment modified for people with disabilities.

Access must be provided to appropriate learning and/or assessment support when required.

Assessment processes and techniques must be culturally appropriate, and appropriate to the language and literacy capacity of the candidate and the work being performed.

Validity and sufficiency of evidence require that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice with a decision of competence only taken at the point when the assessor has complete confidence in the person's competence
- all assessment that is part of a structured learning experience must include a combination of direct, indirect

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and supplementary evidence

- where assessment is for the purpose of recognition (RCC/RPL), the evidence provided will need to be current and show that it represents competency demonstrated over a period of time
- assessment can be through simulated project-based activity and must include evidence relating to each of the elements in this unit.

In all cases activity and must include evidence relating to each of the where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge. Questioning will be undertaken in such a manner as is appropriate to the language and literacy levels of the candidate and any cultural issues that may affect responses to the questions, and will reflect the requirements of the competency and the work being performed.

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Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the performance criteria is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.

Facilities may include:

- car parking
- child care centres
- community facilities
- educational facilities
- meeting places
- offices
- security facilities
- sport and recreation venues.

Relevant people may include:

- agents
- clients
- colleagues
- designated OHS representatives
- emergency personnel
- engineers and technicians
- government personnel
- installers
- legal representatives
- members of industry associations
- property owners
- site personnel
- subcontractors
- supervisors
- technical experts
- tenants
- tradespeople.

Industry benchmarks may relate to:

- discounted cash flows
- employment rates
- industry association performance index
- inflation rate
- internal rates of return
- life cycle costings
- published vacancy factors

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Assets may be static or dynamic and include:	• tenancy mix. • buildings • business and marketing contracts • equipment • furniture • goodwill • land • property • vehicles.
Organisational requirements may be outlined and reflected in:	• access and equity principles and practice guidelines • business and performance plans • complaint and dispute resolution procedures • emergency and evacuation procedures • employer and employee rights and responsibilities • goals, objectives, plans, systems and processes • legal and ethical requirements and codes of practice • mission statements and strategic plans • OHS policies, procedures and programs • policies and procedures in relation to client service • policies and procedures relating to own role and responsibility • quality and continuous improvement processes and standards • quality assurance and procedure manuals • records and information systems and processes.

Legislative requirements may be outlined and reflected in:	• Australian standards
	• codes of practice covering the market sector and industry, financial transactions, taxation, environment, construction, land use, native title, zoning, utilities use (water, gas and electricity), and contract or common law
	• consumer protection
	• environmental and zoning laws affecting access security, access and property use
	• freedom of information relevant federal, and state or territory legislation that affects organisational operation, including:
	  • OHS
	  • environmental issues
	  • EEO
	  • industrial relations
	  • anti-discrimination and diversity
	• home building requirements

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- local regulations and by-laws
- privacy laws applying to owners, contractors and tenants
- public health
- quality assurance and certification requirements
- strata, community and company titles
- tenancy agreements
- trade practices laws and guidelines.

Facilities management plan may include:

- asset management process and practice recommendations
- building and engineering maintenance plans
- environment plans and guidelines
- funding strategies
- life cycle management plans
- long-term capital and maintenance financial forecasts
- performance benchmarking recommendations and measurement processes
- planning guidelines
- quality standards
- risk management processes and practices
- utilities plans and infrastructure such as energy, water and sewerage.

Quality assurance goals and strategies may relate to:

- a formal structure against which progress can be evaluated
- budgets and timetables that enable the commitment of resources at appropriate points in the project
- compliance with Australian standards
- contingency plans to cater for a change of corporate focus or significant project difficulties
- continuous improvement strategies
- mechanisms for involving a wide variety of interested parties or stakeholders in the project
- procedures for monitoring and evaluating project outcomes and client satisfaction
- reducing risk by anticipating, evaluating and developing strategies for the management of possible problems
- reporting procedures and protocols.

Life cycle analysis may include:

- computer modelling
- examination of cash flows and other financial projections
- quantitative and qualitative analysis
- probability analysis
- time series recognition.

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Information relating to implementation of facilities management plan may include:	• a formal structure against which progress can be evaluated • acquisition and disposal strategies • budgets and timetables that enable the commitment of resources at appropriate points • consultation strategies to involve stakeholders • contingency plans to cater for changes or significant difficulties • objectives, scope and expected benefits • quality assurance procedures • specifications • transition plans.
Communication channels may include:	• direct line supervision paths • lateral supervision paths • organisational communication protocols and procedures • organisational networks.
Roles and responsibilities may be influenced by:	• codes of conduct • job description and employment arrangements • organisational policies relevant to work role • skills, training and competencies • supervision and accountability requirements, including OHS • team structures.
Feedback strategies may include:	• clients and their legal representatives • management and colleagues • documentation and reports • formal and informal communication • regular meetings.
Evaluation methods could be qualitative or quantitative and may relate to:	• checklists • cost data analysis • expert and peer review • interviews • observation • questionnaires • review of quality assurance data.

Unit Sector(s)

Unit sector	Property development, sales and management

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Competency field

Competency field Property operations and development

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CPPFES2006A Prepare for installation and servicing operations

Modification History

Revised unit
Element structure and performance criteria expanded to reflect workplace requirements
Skills and knowledge requirements and the range statement updated
Unit based on PRMPFES06C Prepare for installation and servicing operations

Unit Descriptor

This unit of competency specifies the outcomes required for a service technician in the field to select and use tools and equipment to install and service fire protection equipment, systems and products. It also covers access to information given in relevant Australian standards to carry out servicing procedures. Knowledge of the legal and regulatory framework relating to installation and servicing operations is required, as all preparatory work must be completed according to relevant legislative, industry and organisational requirements, including policies and procedures relating to occupational health and safety (OHS), ozone depleting substances (ODS) and synthetic greenhouse gases (SGG).
The unit supports one or more extinguishing agent handling licences prescribed under the Ozone Protection and Synthetic Greenhouse Gas Management Act 1989.

Application of the Unit

This unit of competency supports fire service technicians involved in non-trade installation or servicing of fire protection equipment.

Licensing/Regulatory Information

Different states and territories may have regulatory mechanisms that apply to this unit. Candidates are advised to check for regulatory limitations.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Apply rules and regulations to service operations.	1.1	Requirements of relevant ***rules and regulations*** are ***confirmed*** and applied to ***work procedures***.
		1.2	Knowledge of ***ODS and SGG*** emission and legislative and industry requirements is applied when preparing for installation and servicing operations.
		1.3	***Potential and actual breaches of legislative and industry requirements*** are identified and ***action*** is taken according to ***organisational policies and procedures*** and ODS and SGG requirements.
2	Use Australian standards to access information in relation to installation and servicing procedures for fire protection equipment.	2.1	Current ***Australian standards*** are identified according to ***fire protection equipment*** installation and servicing procedures.
		2.2	Information is accessed according to required work procedures.
		2.3	Key principles from Australian standards relating to work procedures are interpreted and legislative, organisational and ***customer requirements*** are met.
3	Manage service vehicle.	3.1	Safety of service vehicles is monitored according to organisational requirements and manufacturers' specifications.
		3.2	Relevant items are safely stored according to organisational policies and procedures, and load carrying capacity of the service vehicle.
		3.3	Motor vehicles are driven and maintained according to

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			organisational requirements.
4	Prepare work area for installation or servicing procedure.	4.1	Surface and surrounding work area are assessed for ***hazards***.
		4.2	Intended work area is prepared for installation or servicing procedure according to organisational requirements and ***OHS policies and procedures***.
5	Identify, select and use tools and equipment effectively to perform installation and servicing procedures on fire protection equipment.	5.1	Relevant ***tools and equipment*** are identified to suit the required installation or servicing procedure.
		5.2	***Hardware*** for product installation is identified that is suitable to specific ***building surface*** or particular servicing procedure.
		5.3	Relevant tools and equipment for installation or servicing procedure are used according to organisational requirements, and ODS, SGG and OHS policies and procedures.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- language and literacy skills to access and use information
- observation skills to:
  - identify hazards in the work area in preparation for service operation
  - identify and remove debris in work area caused by installation or servicing operation
- planning and organising skills to:
  - estimate time to complete activities
  - prioritise tasks
- skills to work safely when:
  - selecting and using equipment
  - selecting suitable fixing (hardware) for building surface to support items being fixed according to manufacturers' technical documents for the hardware
  - using tools and equipment

Required knowledge

- action to take when a breach of health, safety or other policy occurs
- appropriate tools and equipment to select for fire protection equipment installation and servicing operations
- awareness of on-site work permit requirements
- definition of terms used in Australian standards, such as:
  - commentary
  - informative
  - referenced document
  - shall
  - should
- federal, state or territory legislation that affects organisational operations, including:
  - anti-discrimination and diversity
  - equal employment opportunity
- implications of not applying legislative requirements to job functions
- key features of legislation, regulations, codes and standards applicable to fire protection equipment installation and servicing procedures, including:
  - purpose, function and structure of Australian standards
  - Building Code of Australia (BCA)
  - occupancy permits

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  - service manuals and bulletins from manufacturers
- licence requirements for handling ODS and SGG agents
- maintenance requirements for hand and power tools and equipment, including basic daily maintenance procedures for service vehicle
- methods for:
  - converting basic units of measurement and pressure
  - holding work when using power tools
  - using detection equipment for finding hidden utilities
  - using liquid adhesives for attaching location signs
  - preventing ODS and SGG emissions as specified in code of practice
- reasons for preventing ODS and SGG emissions
- reasons and methods for ensuring vehicle stock levels are constantly maintained
- safety requirements for using tools and equipment
- types and purposes of relevant hardware items
- types of electrical safeguards used to protect persons and property

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed by observation of practical demonstration of preparations for installation and servicing operations.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the required skills and knowledge specified in this unit.
	In particular the person should demonstrate the ability to:
	• locate, interpret and apply relevant information, standards and specifications
	• comply with site safety plan, OHS regulations and ODS and SGG regulations (where required) and state and territory legislation applicable to workplace operations
	• comply with organisational policies and procedures, including quality requirements
	• communicate and work effectively and safely with others
	• in a minimum of two different settings:
	  • adhere to safety procedures during preparation procedures
	  • complete workplace housekeeping requirements
	  • create records and documentation
	  • demonstrate knowledge of the BCA, occupancy permits and service manuals and bulletins from manufacturers
	  • identify and interpret Australian standards relevant to installation and servicing operations
	  • identify, select and use tools, equipment and hardware required to perform installation and servicing operations
	  • identify risk reduction measures
	  • identify, select and assemble hardware
	  • prepare work area for installation and servicing operations
	  • manage service vehicles.

Context of and specific resources for assessment	Assessment of essential underpinning knowledge may be conducted in an off-site context. It is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • actual or simulated work environment • necessary tools, specialist equipment, manuals, spare parts and relevant documentation, including Australian standards

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	• assessment documentation • training and assessment record books.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Property Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments.
Guidance information for assessment	Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed. This unit could be assessed on its own or in combination with other units relevant to the job function, for example: • CPPFES2004A Identify types of installed fire safety equipment and systems • CPPFES2005A Demonstrate first attack firefighting equipment.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Rules and regulations may include:	• building surveyor requirements, such as occupancy permit
	• dangerous goods regulations
	• environmental regulations
	• fire protection industry codes of practice
	• licensing arrangements, such as extinguishing agent handling licence
	• ODS and SGG legislation, codes and regulations, such as Ozone Protection and Synthetic Greenhouse Gas Management Amendment Regulations, 1995
	• OHS legislation, codes and regulations
	• relevant Australian standards, such as:
	  • AS 1851 Maintenance of fire protection systems and equipment
	  • AS 2444 Portable fire extinguishers and fire blankets – Selection and location
	  • note: Australian standards are frequently revised and users must always check for currency and amendments
	• relevant federal, state and territory building Acts, regulations and codes, including the BCA
	• other relevant legislation relating to fire protection equipment, including:
	  • international shipping codes
	  • marine codes for different Australian States
	  • requirements of Australian petroleum industry.

Requirements may be ***confirmed*** with:	• colleagues • managers • supervisors • team leaders.
Work procedures may include:	• assignment instructions • equipment manufacturers' requirements • instructions from colleagues, supervisors and managers • personal protective equipment (PPE) requirements • reporting and documentation requirements • specific customer requirements • work instructions to prevent the emission of ODS and SGG in the workplace.

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ODS and SGG extinguishing agents may include:
 	
Note list format:
product name (other names) use
 	
Check the latest amendments to the Ozone Protection and Synthetic Greenhouse Gas Management Act for the current list of ODS and SGG extinguishing agents.
	• ODS and SGG extinguishing agents commonly used in Australia:
	  • FM200 (FE-227 Heptafluoropropane, HFC-227ea) used as a total flooding extinguishing agent and as a replacement for Halon 1301
	  • Halon 1211 (BCF, Halon 1211 BCF, Bromochlorodifluoromethane) used as a streaming agent – requires a special permit in Australia
	  • Halon 1301 (BTM, Halon 1301 BTM, Bromotrifluoromethane) used as a total flooding agent – requires a special permit in Australia
	  • NAF-P-III (HCFC Blend C) used as a streaming agent
	  • NAF-P-IV (HCFC Blend E) used as a streaming agent
	  • NAF-S-III (HCFC Blend A) used as a total flooding agent
	  • SF6 (Sulfurhexafluoride) used as an inerting agent in sealed high voltage switchgear
	• ODS and SGG extinguishing agents **not commonly** used in Australia:
	  • Blitz III (HCFC Blend D) used in flooding systems
	  • CFC-11 (Trichlorofluoromethane) may be found as a propellant in some powder fire extinguishers (this product is banned in Australia but may be found on incoming foreign vessels)
	  • FC-2-1-8 (CEA-308) used in flooding systems
	  • FC-3-1-10 (CEA-410) used in flooding systems
	  • FC-5-1-14 (CEA-614) used as a streaming agent
	  • FE-13 (Trifluoromethane, HFC-23) used as a total flooding agent
	  • FE-241 (Chlorotetrafluoroethane, HCFC-124) used as a total flooding agent for non-occupied spaces and as a streaming agent
	  • FE-25 (Pentafluoroethane, HFC-125) used in inerting and explosion suppression applications
	  • FE-36 (Hexafluoropropane, HFC-236fa) used in portable fire extinguishers – is a replacement for Halon 1211 and Halon 1301
	  • FM100 (HBFC-22B1) used in portable fire extinguishers
	  • Halon 2402 (Dibromotetrafluoroethane) limited use in military systems – requires a special permit in Australia
	  • Halotron I (HCFC Blend B or HCFC-123) used as a total flooding agent and streaming agent
	  • Halotron II (blend of HFC-143a and HFC-125) used as a total flooding agent and as a replacement for Halon 1301

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	• HCFC-22 (Chlorodifluoromethane) used as a propellant in some powder fire extinguishers (this product is banned in Australia but may be found on incoming foreign vessels) • HFC-134a (Unsymmetric tetrafluoroethane) used as a propellant in some powder fire extinguishers.

Potential and actual breaches of legislative and industry requirements may include:	• actions by fire protection technicians, such as:
	  • failing to:
	  • carry out work procedures correctly
	  • complete documentation accurately
	  • report a system or component fault or malfunction to appropriate personnel
	  • making alterations to procedures, equipment or systems without prior authorisation from an approved authority
	  • performing:
	  • unauthorised work
	  • work without appropriate qualification(s) or training
	  • working in an unsafe manner
	• documentation anomalies observed by fire protection technicians, such as:
	  • incorrect or incomplete information or documentation
	  • missing documentation
	  • signed by unauthorised personnel
	• equipment or system is identified as no longer fit for purpose, due to:
	  • component or system faults or malfunctions
	  • changes to:
	  • building structure
	  • site usage or occupancy
	  • protected asset
	  • fire protection equipment or systems not matching 'as built' or installation drawings.

Action may include:	• advising customer • documenting non-compliance • making equipment safe • reporting, as required.
Organisational policies and procedures may be located in quality assurance and/or procedures manuals and relate to:	• documentation and information systems and processes • legal and organisational policies and guidelines, including personnel practices and guidelines outlining work roles, responsibilities and delegations • legislation relevant to service operations • ODS and SGG policies, procedures and programs

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	• OHS policies, procedures and programs • using electronic job scheduling and communication devices.
Australian standards are:	• often referenced in state or federal legislation • published documents developed by technical committees representing the stakeholders • set out specifications and procedures designed to ensure that a material, product, method or service is fit for its purpose and consistently performs or is performed in the way intended.
Fire protection equipment may include:	• delivery lay flat fire hoses • dry powder fire-suppression systems • fire alarm monitoring systems • fire and smoke control features of heating, ventilation and air conditioning systems • fire blankets and containers • fire detection systems • fire hose reels • fire hydrant installations • fire pumpsets • fire sprinklers • fixed aerosol fire-extinguishing systems • foam fire-suppression systems • gaseous fire-suppression systems • medium and high velocity water spray systems • passive fire and smoke containment systems • portable fire extinguishers • portable foam-generating equipment • pyrogenic fire-suppression systems • smoke and heat alarms • sound and intercom warning systems • water mist fire-suppression systems • wet chemical fire-suppression systems • wheeled fire extinguishers.
Customer requirements may include:	• confirming or varying service instructions • copy or details of occupancy permit • following sign-in and sign-out procedures for entry to or exit from premises • providing non-routine or urgent services • providing routine services • providing written or verbal confirmation of services provided and future maintenance schedule • sighting work permits.
Hazards may include:	• environmental, such as improper use of hazardous materials and

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	chemicals, including ODS and SGG • equipment in a work site • ergonomic, such as incorrect manual-handling methods • hazards associated with electrical or mechanical faults • obstructive, such as blocked access to emergency entry or exit points • people in a work site • situations with a potential to cause loss • sources of potential harm • work methods, plans and procedures.

OHS policies and procedures may relate to:	• assessing work site for hazards and risks prior to preparing it for the work procedure
	• displaying signs and using barriers in work area
	• employer and employee rights and responsibilities
	• equipment maintenance and use
	• first aid
	• incident and accident investigation
	• OHS audits and safety inspections
	• OHS hierarchy of control
	• risk assessment and control measures
	• safe operating procedures and instructions, including:
	  • awareness of electrical hazards
	  • emergency procedures
	  • following confined spaces procedures
	  • hazard and risk identification and reporting
	  • those for working safely:
	  • around electrical wiring, cables and overhead powerlines
	  • around tools and equipment
	  • on ladders and raised platforms
	• use and storage of hazardous substances
	• using PPE, including:
	  • appropriate gloves and overalls
	  • dust masks
	  • earmuffs or plugs
	  • hard hats
	  • safety boots or shoes
	  • safety glasses or goggles
	  • sunhats.

Tools and equipment required to cover range of installation and servicing	• fire equipment spare parts, including:
	  • anti-tamper seals
	  • hoses

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procedures may include:	• labels • nozzles • pressure indicators • seals and gaskets • service tags • trigger pins • valves • hand tools, including: • hammers • pliers • screwdrivers • spanners • spirit levels • manual-handling aids, including: • hand trucks • hooks • lifting magnets and lifting straps • suction grips • trolleys • wheelbarrows • non-licensed mechanical-handling aids, including: • cranes • hoists • manually-operated forklifts and pallet trucks • power tools, including: • battery powered drills • hammer drills • nail guns • servicing tools and equipment, including: • hydrostatic test equipment • recharging and pressurising equipment • safety equipment • scales • service tag punch.
Hardware relevant to the wall surface and type of product to be installed or serviced may include:	• bolts • double-sided tape • explosive powered fasteners • hanging brackets • identifying signs • liquid adhesives

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	• locks • locksets • nails • plugs • screws.

Building surface may include:	• autoclaved aerated concrete (AAC) wall, such as:
	  • Besser concrete block
	  • Hebel block wall
	• brick wall
	• concrete
	• plasterboard
	• rendered brick
	• steel sheeting
	• structural steel members
	• tiled wall.

Unit Sector(s)

Fire protection equipment

Custom Content Section

Not applicable.

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CPPFES2025A Inspect, test and maintain gaseous fire-suppression systems

Modification History

Revised unit
Unit updated and equivalent to PRMPFES25C Inspect, test and maintain gaseous fire suppression systems

Unit Descriptor

This unit of competency specifies the outcomes required to complete mechanical inspection, testing and maintenance tasks on installed gaseous fire-suppression systems.

Application of the Unit

This unit of competency supports fire protection technicians responsible for inspecting, testing and maintaining gaseous fire-suppression systems. This unit does not apply to any installation, replacement, maintenance and repair functions that are restricted to licensed trades or occupations (subject to relevant state and territory regulations).

Licensing/Regulatory Information

Work in this area must be completed according to relevant legislative, industry, customer and organisational requirements, including policies and procedures relating to occupational health and safety (OHS), and where needed, to ozone depleting substances (ODS) and synthetic greenhouse gases (SGG) emissions.
The unit supports one or more extinguishing agent handling licences prescribed under the Ozone Protection and Synthetic Greenhouse Gas Management Act 1989.
Different states and territories may have regulatory mechanisms that apply to this unit. Candidates are advised to check for regulatory limitations.
This unit does not cover all the requirements of AS 1851 Maintenance of fire protection systems and equipment.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Apply rules and regulations to service operations.	1.1	Requirements of relevant ***rules and regulations*** are ***confirmed*** and applied to ***work procedures***.
		1.2	Knowledge of ***ODS and SGG materials*** and legislative and industry requirements is applied when inspecting and testing gaseous fire-suppression systems.
		1.3	Knowledge of operation of fire protection systems is applied to determine system ***key functional requirements*** and operation within design limitations.
		1.4	***Compliance requirements are checked*** and ***action*** is taken according to ***organisational policies and procedures***.
2	Research layout and components of gaseous fire-suppression system to be inspected.	2.1	Relevant ***gaseous fire-suppression system information*** is gathered.
		2.2	Gaseous fire-suppression system application and method of operation are identified.
		2.3	Gaseous fire-suppression system ***components*** are identified and located on ***installation drawings***.
		2.4	***Isolation devices*** and interface controls to other systems are identified and located on installation drawings.
3	Prepare to inspect, test and maintain gaseous fire-suppression	3.1	Necessary ***work permits*** are obtained prior to entering customer premises.
		3.2	Relevant persons and occupants are advised of intended tests and associated procedures.

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	systems.	3.3	System and surrounding work area are assessed for ***hazards*** and relevant precautions are taken.
		3.4	Relevant ***tools, equipment and testing devices*** are identified and assembled according to work procedures and organisational requirements.
		3.5	Alarm signalling equipment (ASE) is switched to test mode in ***back-to-base facilities***.
		3.6	Equipment is physically isolated to ensure testing or maintenance procedures do not cause discharge of extinguishing agent.
		3.7	Equipment and interface controls to other systems are electrically isolated to ensure no alarms or actions are unduly generated.
		3.8	Test equipment is installed and calibrated to verify operation of components and system.
4	Inspect and test installed gaseous fire-suppression system.	4.1	System components are identified and located on site, and exact correspondence of system layout to installation drawings is verified and anomalies reported.
		4.2	***Mechanical inspection tasks*** specified for ***maintenance schedule periods*** in relevant ***maintenance information*** are safely completed.
		4.3	***Mechanical test tasks*** specified for maintenance schedule periods in relevant maintenance information are safely completed.
		4.4	Inspection and testing results are recorded and faulty equipment is reported according to organisational and legislative requirements.
		4.5	Relevant ***documentation*** is completed according to organisational and ***customer requirements***.
5	Conduct preventive maintenance on installed gaseous fire-suppression	5.1	***Mechanical preventive maintenance tasks*** specified for maintenance schedule periods and described in relevant maintenance information are safely completed.
		5.2	Faulty equipment is repaired or replaced according to organisational, legislative and customer requirements.

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	system.	5.3	Transportation and refilling of gaseous agent containers by authorised refilling station are organised.
		5.4	Preventive maintenance activities, including repairs and replacements of faulty equipment, are recorded according to organisational, legislative and customer requirements.
		5.5	Relevant documentation is completed according to organisational and customer requirements.
6	Reinstate installed gaseous fire-suppression system.	6.1	Installed gaseous fire-suppression system is ***reinstated*** as fully operational.
		6.2	Customer premises are left in a clean and tidy condition on completion of work.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

• customer service skills
• language, literacy and numeracy skills to:
  • communicate with others clearly and concisely, verbally and in writing
  • interpret information on engineering drawings, such as installation drawings
  • read and comply with work instructions and specifications
  • read and record measurements
  • record and report information neatly and legibly
• planning and organising skills to:
  • estimate time to complete activities
  • prioritise tasks
• interpersonal skills to relate to people from a range of social and cultural backgrounds
• skills to work safely when:
  • applying workplace housekeeping procedures
  • handling and transporting gaseous containers according to legislation (including ODS and SGG requirements), manufacturer and work procedures
  • using hand and power tools
• technical skills to:
  • conduct:
  • function system tests with other system interfaces as specified in AS 1851
  • routine mechanical maintenance on equipment as specified in AS 1851
  • visual mechanical inspection, testing and maintenance tasks as specified in AS 1851
• identify whether gaseous agent is still suitable for existing occupancy risk
  • operate:
  • actuators to determine that operation is within design parameters for installed equipment
  • manual controls of gaseous fire-suppression system
  • standardised control functions on a fire alarm panel that interfaces with the gaseous system to conduct functional tests as specified in AS 1851
  • remove and replace:
  • container actuators (note: the fire protection technician may require manufacturers' endorsement for specific actuators)
  • containers from container bank manifold

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- verify visually that system complies with original installation requirements

Required knowledge

- difference between total flooding and local application systems
- difference between various types of extinguishing gaseous agents used
- extent to which pressures and liquid levels in extinguishing agent containers vary according to temperature change
- fire suppressant action of gaseous agents in terms of smothering, cooling and reacting chemically with the fire radical
- how building structures, services and service penetration within and through protected area enclosures influence the holding time of a gaseous agent
- industrial relations issues applicable to inspecting, testing and maintaining gaseous fire-suppression systems
- industry best practice methods used to isolate actuators to prevent ODS and SGG emissions in the workplace
- key features of legislation, regulations, codes and standards, including ODS and SGG, applicable to inspecting, testing and maintaining gaseous fire-suppression systems, including:
  - action to take when a breach of OHS, ODS and SGG or other policy occurs
  - container handling, moving and transporting requirements
  - environment protection authority, ODS and SGG emission requirements
  - implications of not applying legislative requirements to job functions
- manufacturers' requirements and standards applicable to inspecting, testing and maintaining gaseous fire-suppression systems
- occupational hazards of gaseous agent in terms of:
  - no observable adverse effect level (NOAEL)
  - lowest observable adverse effect level (LOAEL)
  - products of combustion from fire and products of decomposition associated with some gaseous agents when extinguishing a fire
- operating principles of:
  - lock-off, directional and pressure-release valves
  - pneumatic and mechanical actuators interfaced with gaseous systems
  - fire alarm components interfaced with gaseous fire-suppression systems
  - gaseous agent discharge nozzles
- operation of different types of equipment used to store and release gaseous extinguishant agent
- pressures generated during release of gaseous agents, pressure rating requirements of pipework and fittings, and the need for adequate support bracing
- reasons for preventing ODS and SGG emissions in the workplace
- relevant federal, state or territory legislation that affects organisational operations, including:
  - anti-discrimination and diversity
  - equal employment opportunity

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- safety requirements relevant to inspect, test and maintain procedures
- types of:
  - gaseous fire-suppression agents and how they extinguish fire, including concentration and holding time requirements
  - gaseous fire-suppression systems, including:
    - working principles
    - pre-engineered
    - engineered
- use of flooding factors to check extinguishing agent quality

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed by observation of at least two different practical demonstrations of inspecting, testing and maintaining gaseous fire-suppression systems at customers' premises.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the required skills and knowledge specified in this unit. In particular the person should demonstrate the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with OHS and ODS and SGG regulations (where required), and state and territory legislation applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • communicate and work effectively and safely with others. Competency must be demonstrated in a minimum of two different settings, including: • identifying potential hazards and risks • identifying risk-reduction measures • adhering to safety procedures during inspect, test and maintain procedures • identifying installed gaseous fire-suppression systems • identifying and locating system components • identifying, selecting and using tools, equipment and materials effectively to perform inspect, test and maintain procedures on an installed gaseous fire-suppression system • matching installed system to installation drawings • identifying isolation devices and interface controls to other systems • switching alarm signalling equipment to test mode • physically isolating equipment and gaseous fire-suppression systems • electrically isolating equipment and interface controls to other systems • installing and calibrating test equipment • completing specified mechanical inspection tasks, documenting

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	results and reporting faulty equipment • completing specified mechanical test tasks, documenting results and reporting faulty equipment • completing specified mechanical preventive maintenance tasks, repairing or replacing faulty equipment, and documenting results • reinstating system to operational state • completing workplace housekeeping requirements.
Context of and specific resources for assessment	Assessment of essential underpinning knowledge may be conducted in an off-site context. It is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • access to customer premises or a simulated workplace environment • assessment documentation • necessary tools, specialist equipment, manuals and relevant documentation, including ODS and SGG policies and work procedures • training and assessment record books.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Property Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments.
Guidance information for assessment	Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed. This unit could be assessed on its own or in combination with other units relevant to the job function.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Rules and regulations may include:	• dangerous goods regulations
	• environmental regulations
	• licensing arrangements
	• OHS legislation, regulations and codes
	• relevant commonwealth and state or territory building Acts, regulations and codes, such as Building Code of Australia (BCA)
	• relevant Australian standards, such as:
	  • AS 1851 Maintenance of fire protection systems and equipment
	  • note: Australian standards are frequently revised and users must always check for currency and amendments
	• other relevant legislation relating to fire protection equipment, including:
	  • international shipping codes
	  • marine codes for different Australian States.

Requirements may be ***confirmed*** with:	• colleagues • managers • supervisors • team leaders.
Work procedures may include:	• assignment instructions • equipment manufacturers' requirements • instructions from colleagues, supervisors and managers • personal protective equipment requirements • reporting and documentation requirements • specific customer requirements • work instructions to prevent the emission of ODS and SGG in the workplace.

ODS and SGG extinguishing agents may include:
 	
Note list format:
product name (other
	• ODS and SGG extinguishing agents **commonly** used in Australia:
	  • FM200 (FE-227 Heptafluoropropane, HFC-227ea) used as a total flooding extinguishing agent and as a replacement for Halon 1301
	  • Halon 1211 (BCF, Halon 1211 BCF, Bromochlorodifluoromethane) used as a streaming agent – requires a special permit in Australia

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names) use Check the latest amendments to the Ozone Protection and Synthetic Greenhouse Gas Management Act for the current list of ODS and SGG extinguishing agents.	• Halon 1301 (BTM, Halon 1301 BTM, Bromotrifluoromethane) used as a total flooding agent – requires a special permit in Australia • NAF-P-III (HCFC Blend C) used as a streaming agent • NAF-P-IV (HCFC Blend E) used as a streaming agent • NAF-S-III (HCFC Blend A) used as a total flooding agent • SF6 (Sulfurhexafluoride) used as an inerting agent in sealed high voltage switchgear • ODS and SGG extinguishing agents **not commonly** used in Australia: • Blitz III (HCFC Blend D) used in flooding systems • CFC-11 (Trichlorofluoromethane) may be found as a propellant in some powder fire extinguishers (this product is banned in Australia but may be found on incoming foreign vessels) • FC-2-1-8 (CEA-308) used in flooding systems • FC-3-1-10 (CEA-410) used in flooding systems • FC-5-1-14 (CEA-614) used as a streaming agent • FE-13 (Trifluoromethane, HFC-23) used as a total flooding agent • FE-241 (Chlorotetrafluoroethane, HCFC-124) used as a total flooding agent for non-occupied spaces and as a streaming agent • FE-25 (Pentafluoroethane, HFC-125) used in inerting and explosion suppression applications • FE-36 (Hexafluoropropane, HFC-236fa) used in portable fire extinguishers – is a replacement for Halon 1211 and Halon 1301 • FM100 (HBFC-22B1) used in portable fire extinguishers • Halon 2402 (Dibromotetrafluoroethane) limited use in military systems – requires a special permit in Australia • Halotron I (HCFC Blend B or HCFC-123) used as a total flooding agent and streaming agent • Halotron II (blend of HFC-143a and HFC-125) used as a total flooding agent and as a replacement for Halon 1301 • HCFC-22 (Chlorodifluoromethane) used as a propellant in some powder fire extinguishers (this product is banned in Australia but may be found on incoming foreign vessels) • HFC-134a (Unsymmetric tetrafluoroethane) used as a propellant in some powder fire extinguishers.
Key functional requirements relate to interpreting the system	• gaseous flooding discharge time and holding time, and factors that can effect these key design requirements, including: • nozzle location

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functions within design limitations, such as:	• openings in protected enclosure • orifices • pipe blockages • system is total flooding or local gaseous system suppression of fire mechanism in relation to fire triangle • understanding of environmental and occupational hazards caused by gaseous agents.
Checking system compliance requirements may include:	• applying inspection, test and survey requirements according to Australian standards • reviewing documentation to verify that installed systems comply with relevant rules and regulations.
Action may include:	• advising customer • documenting non-compliance • making equipment safe • reporting, as required.
Organisational policies and procedures may be located in quality assurance and procedures manuals relating to:	• documentation and information systems and processes • legal and organisational policies and guidelines, including personnel practices and guidelines outlining work roles, responsibilities and delegations • legislation relevant to service operations • ODS and SGG policies, procedures and programs • OHS policies, procedures and programs • use of electronic job scheduling and communication devices.

Gaseous fire-suppression systems may include:	• synthetic gaseous fire-extinguishing agents (liquefied), such as:
	  • ODS and SGG materials
	  • Novec 1230
	• inert gaseous fire-extinguishing agents (non-liquefied), such as:
	  • Inergen
	  • Argonite
	  • nitrogen
	  • carbon dioxide.

Gaseous fire-suppression system information may include:	• as installed drawings • Australian standards • design drawings • manufacturers' manuals.

Components may include:	• actuators:
	  • mechanical
	  • pyrotechnic
	  • solenoid
	• fire alarm system interface components, such as:
	  • anti-tamper switches

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	• gaseous system controls and indicators on control and indicating equipment (CIE), such as fire indicating panels (FIP) approved to:
	  • AS 1603 Automatic fire detection and alarm systems
	  • AS 4428 Fire detection, warning, control and intercom systems – control and indicating equipment
	• positional monitoring switches
	• pressure switches
	• remote gas control points
	• warning system equipment, such as:
	  • alarm bells
	  • warning lights and strobes
	  • warning speakers.

Installation drawings may include:	• installation drawings that meet the requirements of AS 4214 Gaseous fire extinguishing systems, and fire alarm standards:
	  • in AS 1670.1 Fire detection, warning, control and intercom systems – System design, installation and commissioning – Fire
	  • in AS 1670.4 Fire detection, warning, control and intercom systems – System design, installation and commissioning – Sound systems and intercom systems for emergency purposes
	  • including:
	  • 'for construction' drawings
	  • 'as installed' or 'as built' drawings.

Isolation devices may include:	• CIE, including:
	  • FIP
	  • gas control panels
	  • mechanical isolation devices
	  • pneumatic isolation devices.

Work permits may include permits to:	• ensure that specific OHS requirements are met before entering a work site • enter a restricted area within a work site • enter a work site • enter a work site at specific times.

Hazards may include:	• environmental hazards, such as improper use of ODS and SGG, hazardous materials and other chemicals
	• environmental risks from ODS and SGG emissions that could be caused by:
	  • conducting interface tests between actuators, CIE and fire alarm system during inspect, test and maintain procedures
	  • installing and removing container valve assembly, manifold

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	connection components and actuators • servicing and maintaining container valve assemblies • transporting, storing and manual handling ODS and SGG containers • equipment in a work site • ergonomic, such as incorrect manual-handling methods • hazards associated with electrical or mechanical faults • obstructive, such as blocked access to emergency entry or exit points • people in a work site • sources of potential harm • situations with a potential to cause loss • work methods, plans and procedures.
Tools, equipment and testing devices may include:	• fire equipment spare parts, including: • aerosol test smoke • anti-tamper seals • clamps • service tags • hand tools, including: • hammers • pliers • screwdrivers • spanners • spirit levels • power tools, including: • battery powered drills • hammer drills • manual-handling aids, including: • hand trucks • lifting straps • trolleys • servicing tools and testing devices, including: • actuator simulators • barcode readers • container contents-measurement equipment • electrical multimeter • recharging and pressurising equipment • safety equipment • scales • service tag punch.

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Back-to-base facilities refer to:	• monitoring equipment that is connected by ASE from the CIE to a communication path (telephone line or a radio link) and then to a monitoring centre • monitoring centres, which can be operated by or on behalf of a fire authority for the purposes of mobilising and directing firefighting resources to site where CIE is installed.

Mechanical inspection tasks may include:	• actions to complete mechanical inspection tasks according to AS 1851, such as:
	  • checking enclosure for changes in openings, for example any new, unsealed service penetrations
	  • checking that gas discharge pipe lock-off valve (if fitted) is correctly labelled and accessible
	  • checking that gas containers are secure, accessible and free from damage
	  • inspecting each container pressure indicator to check that pressure is within prescribed limits
	  • where there is no container pressure indicator, checking that system discharged indicator has not operated
	  • checking that release mechanisms, including drop weights, are undamaged, accessible and unimpeded
	  • checking gas container enclosure is accessible, adequately illuminated, ventilated and secured against unauthorised entry
	  • checking integrity of all pneumatic piping and fittings
	  • checking that entire protected area enclosure complies with original design
	  • checking that discharge nozzles are clear and unobstructed, correctly aimed and secured
	  • checking actuating devices for any condition likely to adversely affect their operation, such as excessive deposits of dust or paint coating
	  • inspecting all areas adjacent to protected area to ensure that migration of gas does not create a hazard to personnel
	  • inspecting protected area to check that the risk has not changed from original design, such as computer room to combustible storage and equipment
	  • checking that all pipework, flexible connectors and manifolds are free from damage and adequately secured
	  • checking that discharge from all pressure relief devices and vent valves does not create a hazard to personnel
	  • checking that all directional valves and check valves are correctly orientated
	  • determining whether container valve overhaul is due
	  • determining whether container hydrostatic pressure test is

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	due according to AS 2030 Gas cylinders or AS 1851 Maintenance of fire protection systems and equipment • checking age of pyrotechnic actuator to determine if due for replacement.
Maintenance schedule periods may be:	• monthly • six monthly • yearly • five yearly • ten yearly.
Maintenance information may include:	• Australian standards • manufacturers' specifications and recommended procedures • service manual instructions • service manuals and bulletins.

Mechanical test tasks may include:	• actions to complete mechanical test tasks according to AS 1851, such as:
	  • simulating a system operation and confirming that discharge actuators and directional valves operate correctly
	  • testing operation of all mechanical manual discharge release systems
	  • testing operation of mechanical automatic discharge release systems not operated through CIE, such as fusible links
	  • operating system lock-off valve and confirming that the system inoperative visual warning device (VWD) operates
	  • confirming, by weighing, liquid level determination or pressure reading (inert gases only), that each gas container is charged with correct quantity of extinguishing agent
	  • testing to ensure correct operation of all automatic pneumatic controls
	  • simulating operation of agent release detection device and confirming indication of agent release at system control panel.

Documentation may include:	• application for credit forms • certificates of inspection • corrective action reports • customer recommendation forms • equipment recommendation forms • expense claims • job cards • maintenance record systems • motor vehicle fleet cards • petty cash vouchers • product documentation

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	• service agreements • service test record logbooks.
Customer requirements may include:	• confirming or varying service instructions • following sign-in and sign-out procedures for entry to or exit from premises • providing non-routine or urgent services • providing routine services • sighting work permits • written or verbal confirmation of services provided and future maintenance schedule.

Mechanical preventive maintenance tasks may include:	• actions to complete routine mechanical maintenance tasks according to AS 1851, such as:
	  • checking operation of mechanical container actuator and lubricating as necessary
	  • checking operation of remote mechanical release system and lubricating as necessary
	  • checking operation of automatic mechanical release system and lubricating as necessary
	  • replacing pyrotechnic container actuator that will exceed its listed lifetime prior to next scheduled maintenance
	  • cleaning dampers and nozzles that are subject to deposit of contaminants, such as cooking oil, hot wax, etc.
	• actions to conduct non-routine maintenance, such as general isolation to CIE so that building works can be done, then resetting systems after works are completed.

Reinstate process may involve:	• confirming all interface actuators are isolated and appropriate signage, documentation and lock-off are in place • removing transport caps on actuator outlets, plugs and locking devices according to manufacturer and organisational requirements • re-installing pneumatic actuators and pilot and slave tubes and fittings according to finalised design documentation and installation drawings • checking pneumatic actuator and pilot and slave tubes connection are free from kinks and physically checking for tightness • re-installing electrical and mechanical actuators according to finalised design documentation and installation drawings • physically checking tightness of electrical and mechanical actuators, and that they are correctly set to operate • re-installing manual actuators according to finalised design documentation and installation drawings • physically checking tightness of manual actuators, and that they are correctly set to operate with safety device engaged

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	• activating all interfaced actuators and removing signage, documentation and lock-off for functional testing • advising relevant persons that system is fully operational and providing appropriate technical, maintenance or handover instructions on operation of system • leaving work site clean and tidy with materials disposed of or recycled according to state or territory legislative and industry requirements.

Unit Sector(s)

Fire protection equipment

Custom Content Section

Not applicable.

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CPPFES2043A Prevent ozone depleting substance and synthetic greenhouse gas emissions

Modification History

Revised unit
Unit updated and equivalent to PRMPFES43A Prevent ozone depleting substance and synthetic greenhouse gas emissions

Unit Descriptor

This unit of competency specifies the outcomes required to identify and describe agreements, protocols, legislation, regulations, codes of practice and handling licences developed to reduce ozone layer depletion and global warming.

Application of the Unit

This unit of competency supports individuals responsible for:

- complying with legal, industry, regulatory and licensing requirements relating to ozone depleting substance (ODS) and synthetic greenhouse gas (SGG) extinguishing agents used in fire protection
- considering the impact of work practices in the fire protection industry on ozone layer depletion and global warming
- proposing changes to reduce the risk of accidental emmissions that contribute to ozone layer depletion and global warming.

Licensing/Regulatory Information

The unit supports one or more fire protection industry extinguishing agent handling licences (EAHL) prescribed under the Ozone Protection and Synthetic Greenhouse Gas Management Act 1989.
Different states and territories may have regulatory mechanisms that apply to this unit. Candidates are advised to check for regulatory limitations.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Apply rules and regulations to the use of ODS and SGG extinguishing agents.	1.1	Requirements of relevant ***rules and regulations*** are ***confirmed*** and applied to ***work procedures*** to prevent ODS and SGG emissions.
		1.2	***Compliance requirements are checked*** and ***action*** is taken according to organisational policies and procedures, ODS and SGG policies and procedures, and best practice requirements.
2	Identify ODS and SGG handling licences, trading authorisations and usage permits.	2.1	Types of ODS and SGG ***extinguishing agent handling licences***, licence requirements and ***entitlements of licensees*** are identified.
		2.2	Extinguishant trading authorisations are identified.
		2.3	Halon special permit usage requirements are identified.
3	Apply an understanding of ozone layer depletion and global warming.	3.1	Role and functions of ***ozone layer*** are identified and explained.
		3.2	Factors involved with, and effects of, ***global warming*** are identified and described.
		3.3	***ODS and SGG extinguishing agents*** used in fire protection industry are identified by type.
		3.4	***Effect of ozone depletion and global warming*** on human health, environment and fire protection industry work practices is described.
		3.5	Relevant fire protection industry ODS and SGG work practices are identified.

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3.6 Improvements to ODS and SGG work practices are identified and proposed to reduce the risk of accidental emmissions.

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- language, literacy and numeracy skills to:
  - communicate with others clearly and concisely, verbally and in writing
  - read and comply with work industry regulations and codes of practice
  - interpret information
- initiative and enterprise skills to:
  - seek advice on license requirements
  - apply understanding of ozone layer depletion and global warming to change and improve fire protection industry work practices
  - identify and act upon learning opportunities
- technology skills to use technology to access information

Required knowledge

- effect of ozone layer
- actions to take where a breach of ODS and SGG policies and procedures occurs
- effect of:
  - ODS and SGG emissions on ozone depletion and global warming
  - ozone depletion and global warming on environment and human health
- factors involved in global warming
- implications of not applying ODS and SGG legislative requirements to the workplace
- key features of:
  - legislation, regulations and standards applicable to ozone protection in the fire protection industry
  - fire protection industry codes of practice
- ODS and SGG substances used in the fire protection industry
- ODS and SGG EAHL features and requirements, authorisations and permit requirements
- relevant federal, state or territory legislation that affects organisational operations

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed by oral or written questioning covering: • underpinning knowledge of the effects of ODS and SGG emissions and current arrangements • workplace examples of action taken to reduce risk of emissions and responses to potential or actual breaches of legislation.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the required skills and knowledge specified in this unit.
	In particular the person should demonstrate the ability to:
	• apply understanding of ozone layer depletion and global warming for:
	  • discussing the effect of ODS and SGG emissions on the ozone layer and global warming
	  • describing the impact of ozone depletion and global warming on human health and the environment
	  • assessing impact on fire protection industry work practices
	  • proposing changes to fire protection industry work practices to meet ODS and SGG legal requirements
	  • taking action to respond to potential and actual breaches of ODS and SGG regulations
	• locate, interpret and explain:
	  • ODS and SGG legal requirements for handling extinguishing agents in the fire protection industry
	  • EAHL types, associated responsibilities, usage permits and trading authorisations
	  • agreements, protocols, regulatory requirements, fire protection industry code of practice, and Australian standards relevant to EAHL.

Context of and specific resources for assessment	Assessment of essential underpinning knowledge may be conducted in an off-site context. It is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • assessment documentation • necessary legislation and regulatory documents, manuals, textbooks and other relevant documentation

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	• training and assessment record books.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Property Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments.
Guidance information for assessment	Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed. This unit could be assessed on its own or in combination with other units relevant to the job function.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Rules and regulations may include:	• dangerous goods regulations • environmental regulations • fire protection industry codes of practice • licensing arrangements, such as EAHL • manufacturers' system manuals • ODS and SGG legislation, codes and regulations, including penalties and policing • OHS legislation, regulations and codes • other relevant legislation relating to fire protection equipment, including: • international shipping codes

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	• marine codes for different Australian States • requirements of Australian petroleum industry • relevant agreements and protocols • relevant Australian standards, such as: • AS 1851 Maintenance of fire protection systems and equipment • note: Australian standards are frequently revised and users must always check for currency and amendments • relevant federal, state and territory Acts, regulations and codes.
Requirements may be ***confirmed*** with:	• colleagues • managers • supervisors • team leaders.
Work procedures may include:	• assignment instructions • equipment manufacturers' requirements • instructions from colleagues, supervisor or manager • personal protective equipment requirements • reporting and documentation requirements • specific customer requirements.
Checking compliance requirements may include ensuring that:	• persons trading in ODS and SGG hold the appropriate trading authorisation or ODS and SGG permit • scope of work to be undertaken is covered by the appropriate license.
Action may include:	• advising customer • documenting non-compliance • making equipment safe • reporting, as required.
Types of ***extinguishing agent handling licence*** include:	• control systems installation, commissioning and decommissioning • fixed system installation and decommissioning • fixed system testing and maintenance • portable fire extinguisher maintenance • recovery, reclamation, fill and recycling • warehouse maintenance.
Entitlements of licensees include:	• portable fire extinguisher maintenance licence entitles holder: • to charge and recharge a portable fire extinguisher with non-ODS and SGG agent • note: a reclaim and refill licence is required to charge or recharge a portable extinguisher with ODS or SGG • repair the extinguisher valve • fixed system installation and decommissioning licence entitles

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	holder to:
	• install and decommission a gaseous fire-extinguishing system (fire protection equipment) including to:
	  • install and disconnect actuation devices (mechanisms) to and from container valves
	  • install and disconnect gaseous agent containers
	  • install and disconnect interconnections to other gaseous system containers
	  • install and disconnect ancillary equipment connections to manifold and pipework
	  • attach and remove transport equipment, such as valve outlet and actuator port caps, plugs and locking devices installed to prevent accidental discharge
	• commission actuation control devices set to operate and engage safety devices as needed and decommission these devices
	• fixed system testing and maintenance licence entitles holder to:
	• test and maintain a gaseous fire-extinguishing system (fire protection equipment), including to:
	  • test actuation release systems
	  • disconnect and reconnect actuation devices (mechanisms)
	  • disconnect and reconnect interconnections to other gaseous system containers
	  • disconnect and reconnect ancillary equipment connections from containers to manifold and pipework
	  • test actuation devices (mechanisms)
	  • perform tests and maintenance on any fire detection and alarm system, including any remote operation panel and actuation and control system that interfaces with or forms part of a gaseous fire-extinguishing system
	  • perform tests and maintenance on gaseous agent containers and ancillary equipment connections from containers to manifold and pipework
	• recovery, reclamation, fill and recycling licence entitles holder to:
	• recover, reclaim, fill and recycle an extinguishing agent into and from a fire extinguisher and gaseous fire-extinguishing system container, from and to a bulk agent container
	• warehouse maintenance licence entitles holder to:
	• monitor for leakage stocks of extinguishing agent bulk agent containers in a warehouse and, as needed, to transfer extinguishing agent from a leaking storage container
	• control systems installation, commissioning and

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	decommissioning licence entitles holder to: • install, commission and decommission a fire detection and alarm system, including any remote operation panel and actuation and control system that interfaces with or forms part of a gaseous fire-extinguishing system.
Ozone layer facts include:	• composed of ozone (O3), which is a form of oxygen in which the oxygen molecule contains three atoms of oxygen instead of the usual two • ozone forms less than 0.4 parts per million of the atmosphere • about 90% of ozone is in upper part of atmosphere (stratosphere) • most ozone is in the layer from 20 to 25 km above the earth's surface.
Global warming involves:	• carbon dioxide found in small quantities (about 350 parts per million) in the atmosphere • carbon dioxide trapping infra red (heat) radiation and warming the atmosphere – the greenhouse effect.

ODS and SGG extinguishing agents may include:
 	
Note list format:
product name (other names) use
 	
Check the latest amendments to the Ozone Protection and Synthetic Greenhouse Gas Management Act for the current list of ODS and SGG extinguishing agents.
	• ODS and SGG extinguishing agents **commonly** used in Australia:
	  • FM200 (FE-227 Heptafluoropropane, HFC-227ea) used as a total flooding extinguishing agent and as a replacement for Halon 1301
	  • Halon 1211 (BCF, Halon 1211 BCF, Bromochlorodifluoromethane) used as a streaming agent – requires a special permit in Australia
	  • Halon 1301 (BTM, Halon 1301 BTM, Bromotrifluoromethane) used as a total flooding agent – requires a special permit in Australia
	  • NAF-P-III (HCFC Blend C) used as a streaming agent
	  • NAF-P-IV (HCFC Blend E) used as a streaming agent
	  • NAF-S-III (HCFC Blend A) used as a total flooding agent
	  • SF6 (Sulfurhexafluoride) used as an inerting agent in sealed high voltage switchgear
	• ODS and SGG extinguishing agents **not commonly** used in Australia:
	  • Blitz III (HCFC Blend D) used in flooding systems
	  • CFC-11 (Trichlorofluoromethane) may be found as a propellant in some powder fire extinguishers (this product is banned in Australia but may be found on incoming foreign vessels)
	  • FC-2-1-8 (CEA-308) used in flooding systems
	  • FC-3-1-10 (CEA-410) used in flooding systems
	  • FC-5-1-14 (CEA-614) used as a streaming agent
	  • FE-13 (Trifluoromethane, HFC-23) used as a total flooding

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	agent • FE-241 (Chlorotetrafluoroethane, HCFC-124) used as a total flooding agent for non-occupied spaces and as a streaming agent • FE-25 (Pentafluoroethane, HFC-125) used in inerting and explosion suppression applications • FE-36 (Hexafluoropropane, HFC-236fa) used in portable fire extinguishers – is a replacement for Halon 1211 and Halon 1301 • FM100 (HBFC-22B1) used in portable fire extinguishers • Halon 2402 (Dibromotetrafluoroethane) limited use in military systems – requires a special permit in Australia • Halotron I (HCFC Blend B or HCFC-123) used as a total flooding agent and streaming agent • Halotron II (blend of HFC-143a and HFC-125) used as a total flooding agent and as a replacement for Halon 1301 • HCFC-22 (Chlorodifluoromethane) used as a propellant in some powder fire extinguishers (this product is banned in Australia but may be found on incoming foreign vessels) • HFC-134a (Unsymmetric tetrafluoroethane) used as a propellant in some powder fire extinguishers.

Effect of ozone depletion and global warming on human health and the environment may include:	• changes to work practices, including those in the fire protection industry
	• constraints on:
	  • aquatic ecosystems
	  • human immune system
	• increased:
	  • incidence of photochemical smog
	  • risk of:
	  • cataracts
	  • skin cancer
	  • inhibited growth of plants
	  • reduced production of agriculture.

Unit Sector(s)

Fire protection equipment

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Custom Content Section

Not applicable.

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CPPFES2047A Inspect and test control and indicating equipment

Modification History

Revised unit
Unit updated and equivalent to PRMPFES47A Inspect and test control and indicating equipment

Unit Descriptor

This unit of competency specifies the outcomes required to complete routine monthly and six-monthly inspect and test procedures to verify that control and indicating equipment (CIE) for a fire alarm system functions as intended. The unit involves working safely, isolating and resetting CIE, conducting compliance tests, visually inspecting, identifying non-compliance defects, and fulfilling mandatory reporting requirements.

Application of the Unit

This unit of competency supports fire protection technicians responsible for inspecting CIE and routinely testing their operational functions to ensure that fire alarm systems are working as intended.

Licensing/Regulatory Information

The unit supports one or more extinguishing agent handling licences (EAHL) prescribed under the Ozone Protection and Synthetic Greenhouse Gas Management Act 1989.
Licence to practise: The skills and knowledge described in this unit do not require an electrical licence or an Australian Communications and Media Authority cabling licence to practise.
Service technicians are not permitted to undertake any installation, replacement, maintenance and repair functions that are restricted to licensed trades or occupations (subject to relevant state and territory regulations).
Different states and territories may have regulatory mechanisms that apply to this unit. Candidates are advised to check for regulatory limitations.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Plan to conduct routine monthly or six-monthly inspect and test operations on CIE.	1.1	***Occupational health and safety (OHS) policies and procedures*** for a given work area are obtained and reviewed.
		1.2	Established OHS requirements, risk control measures for ozone depleting substance (ODS) and synthetic greenhouse gas (SGG) emission, and ***organisational requirements*** are followed in preparation for ***maintenance activity***.
		1.3	Safety ***hazards*** are noted, and established risk control measures for on-site work are implemented.
		1.4	***Work permits*** are organised prior to entering customer premises.
		1.5	***Relevant persons*** are consulted to coordinate work effectively with other work site staff.
		1.6	Locations of ***system components and materials*** are determined from specifications and ***installation drawings***.
		1.7	Inspection and test procedures are arranged to suit ***CIE*** according to ***legislative and industry requirements***, Australian standards, job schedule and manufacturers' instructions.
		1.8	***Documentation*** needed to conduct tests is confirmed according to ***work procedures*** and job requirements.
		1.9	***Tools, equipment and test devices*** are checked for correct operation and safety according to work procedures and job requirements.

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2	Inspect CIE.	2.1	ODS, SGG and OHS policies and procedures are followed and risk control measures are applied when inspecting CIE.
		2.2	CIE functions to be used to conduct routine tests according to relevant Australian standard, are identified in manufacturers' instructions.
		2.3	Alarm zone circuits, plant and other ***system interfaces*** to be isolated to allow conduct of maintenance activity are identified according to OHS, ***ODS and SGG extinguishing agent*** emission requirements and work procedures.
		2.4	Circuits and ***actuators*** to be isolated are identified.
		2.5	Visual inspections are conducted according to relevant Australian standard for monthly and six-monthly testing.
		2.6	CIE inspection results are validated against requirements according to relevant Australian standard.
3	Test CIE.	3.1	ODS, SGG and OHS policies and procedures are followed and risk control measures are applied when testing CIE.
		3.2	Circuits, actuators, ***back-to-base facilities*** and other system interfaces are isolated according to work procedures.
		3.3	Alarm zone circuits, plant and other system interfaces are confirmed as isolated to make sure system cannot be activated during testing.
		3.4	Monthly and six-monthly tests are performed according to AS 1851, with CIE and components checked to confirm functionality according to manufacturers' instructions, system ***finalised design documentation*** and organisational requirements.
		3.5	Methods for dealing with unexpected situations are discussed with relevant persons and documented.
		3.6	Approval of authorised relevant persons is obtained in order to deal safely with unexpected situations.

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4	Report findings of inspection and testing.	4.1	ODS, SGG and OHS policies and procedures, risk control measures and work procedures are followed when reporting inspect and test findings.
		4.2	Work site and equipment are cleaned and made safe according to work procedures.
		4.3	Non-compliance defects are identified and reported according to work procedures.
		4.4	Recommendations for rectifying defects are made according to work procedures.
		4.5	CIE is reset to operational state.
		4.6	Documentation is completed according to work procedures and relevant persons are notified.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- customer service skills
- language, literacy and numeracy skills to:
  - communicate with others clearly and concisely, verbally and in writing
  - document test results and non-compliance defects neatly and legibly
  - read and comply with work instructions and specifications
  - read and interpret final design documentation and manufacturers' instructions
  - read and record measurements
- planning and organising skills to:
  - estimate time to complete activities
  - prioritise tasks
- skills to work safely when:
  - applying workplace housekeeping procedures
  - identifying work area hazards in preparation for inspection and test procedures
  - removing debris caused by inspect and test operations in the work area
  - selecting and using tools, equipment and materials for specific tasks
- interpersonal skills to relate to people from a range of social and cultural backgrounds
- technical skills to:
  - check routine service details of fire alarm system components and materials
  - identify and isolate zone circuits, plant, back-to-base facilities, actuators and other system interfaces
  - perform routine monthly and six-monthly inspect and test procedures according to AS 1851 Maintenance of fire protection systems and equipment
  - physically isolate actuators to inhibit operation
  - reset CIE to operational state
  - test actuators for operation and reset to operational state
  - verify compliance and functionality of CIE against monthly and six-monthly schedules in AS 1851 Maintenance of fire protection systems and equipment

Required knowledge

- action to take when a breach of OHS, ODS and SGG or other policy occurs
- awareness of on-site work permit requirements
- common controls and indicators on CIE
- detection and warning components connected to CIE
- environmental conditions that cause actuators to create false alarms
- federal, state or territory legislation that affects organisational operations, including:
  - anti-discrimination and diversity

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  - equal employment opportunity
- industrial relations issues relevant to inspecting and testing CIE
- key features of legislation, regulations, codes and standards applicable to inspecting and testing CIE, including:
  - implications of not applying legislative requirements to job functions
  - intent of Australian standard AS 1851 Maintenance of fire protection systems and equipment, in relation to CIE inspect and test operations
- key functional differences between a conventional and addressable CIE
- key operational principles of CIE specifically interfaced to fire-suppression systems
- local controls (LC), local control stations (LCS), aural alarms, visual warning devices (VWD) and actuators on fire-suppression systems interfaced to CIE
- methodology used to conduct AS 1851 Maintenance of fire protection systems and equipment, monthly and six-monthly maintenance schedules relevant to conventional and addressable CIE
- operation of actuators
- safety requirements for using tools, equipment and materials
- tools, equipment and materials for conducting monthly and six-monthly inspect and test procedures on CIE according to AS 1851 procedures
- types of electrical safeguards used to protect persons and property

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed by observation of at least two practical demonstrations of inspecting and testing CIE specifically interfaced to different fire-suppression systems: • conventional fire indicating panels and microprocessor analogue fire indicating panel fire detection systems • fire alarm systems that comply with AS 1670 Fire detection, warning, control and intercom systems – Fire • emergency warning and intercommunication systems that comply with AS 1670.4 Fire detection, warning, control and intercom systems - System design, installation and commissioning - Sound systems and intercom systems for emergency purposes • fire alarm systems interfaced with activating mechanisms of a fire-suppression system. The type of CIE interfaced to fire-suppression systems tested should correlate to the workplace setting of the candidate.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the required skills and knowledge specified in this unit. In particular the person should demonstrate the ability to: • locate, interpret and apply relevant information, standards and specifications • comply with site safety plan, OHS regulations, ODS and SGG regulations (where required), and state and territory legislation applicable to workplace operations • comply with organisational policies and procedures, including quality requirements • communicate and work effectively and safely with others • organise work permits • adhere to safety procedures during inspect and test procedures • identify risk-reduction measures • identify and locate system components and materials • identify, select and use tools, equipment and test equipment • identify and isolate alarm zone circuits, back-to-base facilities, actuators, plant and other system interfaces • confirm that circuits, plant and other system interfaces are isolated • complete mandatory and optional test and verification

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	requirements applicable to installed fire-suppression systems • perform test procedures on CIE interfaced to fire-suppression systems • visually inspect fire-suppression systems • identify and report non-compliance defects • develop recommendations to rectify defects • reset CIE and fire-suppression system to operational state without unwanted CIE outputs or alarms • complete workplace housekeeping requirements • complete records and documentation.
Context of and specific resources for assessment	Assessment of essential underpinning knowledge may be conducted in an off-site context. It is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • access to customer premises or a simulated workplace environment • assessment documentation • necessary tools, specialist equipment, manuals and relevant documentation • training and assessment record books.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Property Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments.
Guidance information for assessment	Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed. This unit could be assessed on its own or in combination with other units relevant to the job function.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Occupational health and safety policies and procedures may relate to:	• assessing work site for hazards and risks prior to preparing it for work procedure
	• displaying signs and using barriers in work area
	• employer and employee rights and responsibilities
	• incident and accident investigation
	• OHS audits and safety inspections
	• OHS hierarchy of control
	• risk assessment and control measures
	• safe operating procedures and instructions, including:
	  • awareness of electrical hazards
	  • emergency procedures
	  • equipment maintenance and use
	  • first aid
	  • following confined spaces procedures
	  • hazard and risk identification and reporting
	  • use and storage of hazardous substances
	  • using personal protective equipment (PPE), including:
	  • appropriate gloves and overalls
	  • dust masks
	  • earmuffs or plugs
	  • hard hats
	  • safety boots or shoes
	  • safety glasses or goggles
	  • sunhats
	  • those for working safely:
	  • around electrical wiring, cables and overhead powerlines
	  • around tools and equipment
	  • on ladders and raised platforms.

Organisational requirements may include:	• documentation and information systems and processes • legal and organisational policies and guidelines, including personnel practices and guidelines outlining work roles, responsibilities and delegations

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	• legislation relevant to inspect and test operations for CIE • OHS policies, procedures and programs • procedures and work instructions to prevent the emission of ODS and SGG in the workplace • use of electronic job scheduling and communication devices.
Maintenance activity may include:	• actions to conduct routine maintenance according to AS 1851 Maintenance of fire protection systems and equipment • actions to conduct non-routine maintenance, such as general isolation of a system to allow building works to be completed and subsequent resetting of the system after works completed.

Hazards may include:	• environmental, including:
	  • improper use of hazardous material and other chemicals
	  • improper use or emission of ODS and SGG; emissions may be caused by:
	  • conducting interface tests during commissioning, servicing and decommissioning procedures between container activating mechanisms, CIE and fire alarm system
	  • installing and removing container valve assembly, manifold connection components and activating mechanisms
	  • servicing and maintaining container valve assemblies
	  • transporting, storing and manually handling containers containing ODS and SGG agents
	• ergonomic, such as incorrect manual-handling methods
	• obstructive, such as blocked access to emergency entry or exit points
	• any situation with a potential to cause loss
	• any source of potential harm
	• equipment in a work site
	• hazards associated with electrical or mechanical faults
	• people in a work site
	• work methods, plans and procedures.

Work permits may include permits to:	• enter a work site • enter a work site at specific times • enter a restricted area within a work site • ensure that specific OHS requirements are met before entering a work site.
Relevant persons may include:	• building owners or nominated representatives • colleagues • customers • managers • supervisors

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	• team leaders.

System components and materials may include:	• colour graphic visual display units (VDUs)
	• fire indicator panel components
	• mimic panels
	• remote indicating equipment, such as:
	  • standby batteries
	  • sub-fire indicator panels
	• fire detection equipment, such as:
	  • data gathering control units
	  • analogue and analogue addressable smoke, heat and gas detectors
	• warning system equipment, such as:
	  • alarm bells
	  • mimic and location panels
	  • warning and strobe lights
	  • warning speakers
	• fire-suppression systems equipment, such as:
	  • actuators, such as pneumatic, electrical, mechanical and manual operation
	  • container discharge valves
	  • fittings, including hose fittings
	  • flexible discharge hoses
	  • pilot and slave tubes
	• interface equipment to other fire protection and building services systems, such as:
	  • door system release controls
	  • electrical interface relays and contacts
	  • flow switches and pressure switches
	  • optical couplers
	  • utility shutdown devices
	  • solenoid valves and other activating mechanisms
	  • interface communication devices, such as:
	  • remote public address (PA) system outputs
	  • two-way radios
	  • warden intercommunication phones.

Installation drawings may include:	• installation drawings that meet the requirements of AS 4214 Gaseous fire extinguishing systems, and AS 1670 Fire detection, warning, control and intercom systems, parts 1 and 4, including:
	  • ‘for construction’ drawings
	  • ‘as installed’ and ‘as built’ drawings.

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Control and indicating equipment may include:	• fire indicating panels (FIP) approved to AS 1603 Automatic fire detection and alarm systems or AS 4428 Fire detection, warning, control and intercom systems – control and indicating equipment
	• equipment specifically interfaced to fire-suppression systems:
	  • actuation circuit supervision indicators
	  • alarm operation requirements
	  • discharge time delays
	  • dual zone operations
	  • inhibit discharge switches
	  • inoperative status indicators
	  • shutdown operations
	  • system operation indicators
	  • system warning indications.

Legislative and industry requirements may include:	• building surveyor requirements, such as occupancy permits
	• dangerous goods regulations
	• environmental regulations, including ODS and SGG legislation, codes and regulations
	• fire protection industry codes of good practice
	• licensing arrangements, such as EAHL
	• manufacturers' system manuals
	• OHS legislation, codes and regulations
	• relevant federal, state and territory building Acts, regulations and codes, such as:
	  • Ozone Protection and Synthetic Greenhouse Gas Management Act 1989
	  • Building Code of Australia (BCA)
	• relevant Australian standards, such as:
	  • AS 1603 Automatic fire detection and alarm systems
	  • AS 1670 Fire detection, warning, control and intercom systems, parts 1 and 4
	  • AS 1851 Maintenance of fire protection systems and equipment
	  • AS 4214 Gaseous fire extinguishing systems
	  • AS 4428 Fire detection, warning, control and intercom systems – control and indicating equipment
	  • note: Australian standards are frequently revised and users must always check for currency and amendments
	• other relevant legislation relating to fire protection equipment, including:
	  • international shipping codes
	  • marine codes for different Australian States

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	• requirements of Australian petroleum industry.
Documentation may include:	• corrective action reports • customer recommendation forms • equipment recommendation forms • expense claims • job cards • maintenance record system • manufacturers' system documentation • product documentation • service agreements • service test record logbooks • test results and test reports.
Work procedures may include:	• assignment instructions • equipment manufacturers' requirements • instructions from colleagues, supervisors and managers • ODS, SGG and OHS requirements • PPE requirements • reporting and documentation requirements • specific customer requirements.

Tools, equipment and test devices may include:	• hand tools, including:
	  • hammers
	  • pliers
	  • screwdrivers
	  • spanners
	  • spirit levels
	• fire equipment spare parts, including:
	  • anti-tamper seals
	  • batteries
	  • bulbs and globes
	  • service tags
	• manual-handling aids, including:
	  • hand trucks
	  • lifting straps
	  • trolleys
	• power tools, including:
	  • battery powered drills
	  • hammer drills
	• servicing tools and test devices, including:
	  • barcode readers
	  • electrical multimeters

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	• hydrostatic test equipment • recharging and pressurising equipment • safety equipment • scales • service tag punches • simulator actuators • sound meters.
System interfaces may include:	• building management systems • building warning systems • controls for pressurisation systems, air conditioning system shutdowns and smoke spills • operating signals between CIE and building services systems, such as utility shutdown devices.

ODS and SGG extinguishing agents may include:
 	
Note list format:
product name (other names) use
 	
Check the latest amendments to the Ozone Protection and Synthetic Greenhouse Gas Management Act for the current list of ODS and SGG extinguishing agents.
	• ODS and SGG extinguishing agents **commonly** used in Australia:
	  • FM200 (FE-227 Heptafluoropropane, HFC-227ea) used as a total flooding extinguishing agent and as a replacement for Halon 1301
	  • Halon 1211 (BCF, Halon 1211 BCF, Bromochlorodifluoromethane) used as a streaming agent – requires a special permit in Australia
	  • Halon 1301 (BTM, Halon 1301 BTM, Bromotrifluoromethane) used as a total flooding agent – requires a special permit in Australia
	  • NAF-P-III (HCFC Blend C) used as a streaming agent
	  • NAF-P-IV (HCFC Blend E) used as a streaming agent
	  • NAF-S-III (HCFC Blend A) used as a total flooding agent
	  • SF6 (Sulfurhexafluoride) used as an inerting agent in sealed high voltage switchgear
	• ODS and SGG extinguishing agents **not commonly** used in Australia:
	  • Blitz III (HCFC Blend D) used in flooding systems
	  • CFC-11 (Trichlorofluoromethane) may be found as a propellant in some powder fire extinguishers (this product is banned in Australia but may be found on incoming foreign vessels)
	  • FC-2-1-8 (CEA-308) used in flooding systems
	  • FC-3-1-10 (CEA-410) used in flooding systems
	  • FC-5-1-14 (CEA-614) used as a streaming agent
	  • FE-13 (Trifluoromethane, HFC-23) used as a total flooding agent
	  • FE-241 (Chlorotetrafluoroethane, HCFC-124) used as a total

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	flooding agent for non-occupied spaces and as a streaming agent • FE-25 (Pentafluoroethane, HFC-125) used in inerting and explosion suppression applications • FE-36 (Hexafluoropropane, HFC-236fa) used in portable fire extinguishers – is a replacement for Halon 1211 and Halon 1301 • FM100 (HBFC-22B1) used in portable fire extinguishers • Halon 2402 (Dibromotetrafluoroethane) limited use in military systems – requires a special permit in Australia • Halotron I (HCFC Blend B or HCFC-123) used as a total flooding agent and streaming agent • Halotron II (blend of HFC-143a and HFC-125) used as a total flooding agent and as a replacement for Halon 1301 • HCFC-22 (Chlorodifluoromethane) used as a propellant in some powder fire extinguishers (this product is banned in Australia but may be found on incoming foreign vessels) • HFC-134a (Unsymmetric tetrafluoroethane) used as a propellant in some powder fire extinguishers.
Actuators (also known as actuation control devices) may include:	• electrical operation: signal generated from CIE panel as part of a fire alarm detection system • manual operation: by direct push lever or pull cable system • mechanical operation: via signal from local control station or fire detector • pneumatic operation: from fire detector (typically heat).
Back-to-base facilities include:	• monitoring equipment which is connected by alarm signalling equipment (ASE) from CIE to a communication path (telephone line or radio link) to a monitoring centre • monitoring centres can be operated by or on behalf of a fire authority for the purposes of mobilising and directing firefighting resources to the site where the CIE is installed.
Finalised design documentation may include:	• documentation that meets the requirements of AS 4214 Gaseous fire extinguishing systems, and AS 1670 Fire detection, warning, control and intercom systems, parts 1 and 4, including: • system concentration and calculations • technical bulletins • material safety data sheets on agents and equipment • manufacturers' information.

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Unit Sector(s)

Fire protection equipment

Custom Content Section

Not applicable.

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HLTFA211A Provide basic emergency life support

Modification History

HLT07 Version 4	HLT07 Version 5	Comments
HLTFA201B Provide basic emergency life support	HLTFA211A Provide basic emergency life support	Significant changes to Required Skills and Knowledge. Changes to Range Statement and some performance criteria. Evidence guide updated

Unit Descriptor

Descriptor

This unit of competency describes the skills and knowledge required to recognise and respond to life threatening emergencies using basic life support measures only

Application of the Unit

The skills and knowledge described here enable a first aider to provide an initial response to an emergency in line with practised actions, Australian Resuscitation Council (ARC) Guidelines, guidelines of Australian national peak clinical bodies and State/Territory legislation and regulations.
Application should be contextualised as required to reflect workplace and community requirements relating to specific risks and hazards and associated injuries.
Training Package users should ensure that implementation is consistent with State/Territory requirements for currency.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Not Applicable

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Employability Skills Information

Employability Skills This unit contains Employability Skills

Elements and Performance Criteria Pre-Content

Elements define the essential outcomes of a unit of competency.

The Performance Criteria specify the level of performance required to demonstrate achievement of the Element. Terms in italics are elaborated in the Range Statement.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Respond in an emergency situation	1.1 Recognise emergency situation and identify *hazards* to health and safety of self and others
	1.2 Minimise immediate risk to self and casualty health and safety by controlling any hazard in accordance with work health and safety requirements
	1.3 Assess casualty and identify injuries, illnesses and conditions
	1.4 Assess the need for assistance

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ELEMENT	PERFORMANCE CRITERIA
2. Apply identified first aid procedures	2.1 Reassure casualty in a caring and calm manner and make comfortable using available resources 2.2 Determine and explain relevant first aid procedures to provide comfort 2.3 Seek consent from casualty prior to applying first aid management 2.4 Respond to the casualty in a culturally aware, sensitive and respectful manner 2.5 Use *identified first aid procedures* as required in accordance with established first aid principles, ARC Guidelines, guidelines of Australian national peak clinical bodies and State/Territory legislation and regulations 2.6 Use safe manual handling techniques as required
3. Communicate details of the incident	3.1 Request ambulance support and/or appropriate medical assistance according to circumstances 3.2 Accurately convey observation of casualty's condition and management activities to ambulance services/relieving personnel 3.3 Adopt a communication style to match the casualty's level of consciousness 3.4 Accurately assess and report details of casualty's physical condition, changes in condition, management and responses to management in line with established procedures 3.5 Maintain confidentiality of records and information in line with privacy principles and statutory and/or organisation policies
4. Evaluate own performance	4.1 Seek feedback from *appropriate clinical expert* 4.2 Recognise the possible psychological impacts on rescuers of involvement in critical incidents 4.3 Participate in debriefing/evaluation to improve future response and address individual needs

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level required for this unit.

Essential knowledge:

The candidate must be able to demonstrate essential knowledge required to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the identified work role

This includes knowledge of:

- ARC guidelines, guidelines of Australian national peak clinical bodies and State/Territory legislation and regulations, including requirements for currency
- Awareness of stress management techniques and available support
- Basic anatomy and physiology relating to:
  - absence of:
    - normal breathing
    - response/consciousness
  - choking/airway obstruction
  - severe bleeding
  - shock
- Chain of survival
- Duty of care requirements
- First aid procedures for:
  - airway management
  - bleeding control
  - care of unconscious
  - casualty that is unresponsive/unconscious and not breathing normally
  - chest pain
  - infection control as it relates to standard precautions
  - respiratory distress, including asthma
  - severe allergic reaction
  - shock
- How to access emergency response support services/personnel
- Need to be culturally aware, sensitive and respectful
- Own skills and limitations
- Privacy and confidentiality requirements
- Relevant workplace hazards

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REQUIRED SKILLS AND KNOWLEDGE

- Understanding of the use of an Automated External Defibrillator (AED), including when to use and when not to

Essential skills:

It is critical that the candidate demonstrate the ability to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the identified work role

This includes the ability to:

- Assess vital signs and response of casualty
- Call an ambulance and/or medical assistance, according to circumstances and report casualty's condition
- Demonstrate first aid casualty management principles:
  - assess and minimise danger
  - check for response
  - maintain casualty's airway, breathing and circulation
- Demonstrate:
  - consideration of the welfare of the casualty
  - control of external bleeding
  - correct procedures for CPR on a resuscitation manikin (i.e. as per units HLTCPR211A Perform CPR)
  - implementation of standard precautions
  - safe manual handling of casualty
- Identify and minimise hazards to health and safety of self and others in the immediate workplace or community environment
- Plan an appropriate first aid response in line with established first aid principles, ARC Guidelines and guidelines of Australian national peak clinical bodies and State/Territory legislation and regulations and respond to contingencies in line with own skills
- Report details of emergency incident and first aid provided

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.

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EVIDENCE GUIDE

Critical aspects of assessment:

- The individual being assessed must provide evidence of specified essential knowledge and essential skills
- Competence should be demonstrated working individually and as part of a first aid team.
- Consistency of performance should be demonstrated over the required range of situations relevant to the workplace or community setting
- Currency of knowledge and skills is to be demonstrated in line with ARC Guidelines, guidelines of Australian national peak clinical bodies and State/Territory legislation and regulations

Context and resources required for assessment:

- For assessment purposes, demonstration of skills in CPR procedures requires using a model of the human body (resuscitation manikin) in line with ARC Guidelines
- Demonstration of first aid procedures for severe bleeding must be demonstrated using standard precautions and first aid equipment including trauma dressings

Access and equity considerations:

- All workers in the health industry should be aware of access and equity issues in relation to their own area of work
- All workers should develop their ability to work in a culturally diverse environment
- In recognition of particular health issues facing Aboriginal and Torres Strait Islander communities, workers should be aware of cultural, historical and current issues impacting on health of Aboriginal and Torres Strait Islander people
- Assessors and trainers must take into account relevant access and equity issues, in particular relating to factors impacting on health of Aboriginal and/or Torres Strait Islander clients and communities

Related unit:

- This unit stands alone and incorporates the content of unit HLTCPR211A Perform CPR

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Range Statement

RANGE STATEMENT

The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.

Condition of the casualty must include, but is not limited to:

- Severe bleeding
- Absence of:
  - Response/conciousness
  - Normal breathing
- Choking/airway obstruction
- Severe allergic reaction

Identified first aid procedures ***must*** *include*:

- Airway management
- Cardiopulmonary Resuscitation (CPR)
- Control severe bleeding
- Provide assistance with self-administered medications, such as auto-injector, bronchodilator and space device in line with State/Territory legislation and regulations and and any available medical/pharmaceutical instructions
- Care of the unconscious person

Resources and equipment are used appropriate to the risk to be met and may include:

- AED (if available)
- Auto-injector
- Bronchodilator and space device
- First aid kit
- Resuscitation mask or barrier

A hazard is:

A source or situation with the potential for harm in terms of human injury or ill-health, damage to property, the environment, or a combination of these

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RANGE STATEMENT

Appropriate clinical expert may include:	• Ambulance officer/paramedic • Appropriately qualified health care professional

Unit Sector(s)

Not Applicable

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HLTHIR403C Work effectively with culturally diverse clients and co-workers

Modification History

Not Applicable

Unit Descriptor

Descriptor

This unit deals with the cultural awareness required for effective communication and cooperation with persons of diverse cultures

Application of the Unit

Application

Work will be within a prescribed range of functions involving known routines and procedures with some accountability for the quality of outcomes

The workplace context may be:

- Specific community
- Community or regional service
- Department of a large institution or organisation
- Specialised service or organisation

Application of this unit should be contextualised to reflect any requirements, issues and practices specific to each workplace

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Not Applicable

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Employability Skills Information

Employability Skills	This unit contains Employability Skills

Elements and Performance Criteria Pre-Content

Elements define the essential outcomes of a unit of competency.	The Performance Criteria specify the level of performance required to demonstrate achievement of the Element. Terms in italics are elaborated in the Range Statement.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Reflect cultural awareness in *work practice*	1.1 Demonstrate awareness of culture as a factor in all human behaviour by using culturally appropriate work practices 1.2 Use work practices that create a culturally and psychologically safe environment for all persons 1.3 Review and modify work practices in consultation with persons from diverse cultural backgrounds
2. Accept *cultural diversity* as a basis for effective work place and professional relationships	2.1 Show respect for cultural diversity in all communication and interactions with co-workers, colleagues and clients 2.2 Use specific *strategies to eliminate bias and discrimination* in the workplace 2.3 Contribute to the development of work place and professional relationships based on acceptance of cultural diversity

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ELEMENT	PERFORMANCE CRITERIA
3. Communicate effectively with culturally diverse persons	3.1 Show respect for cultural diversity in all *communication* with clients, families, staff and others 3.2 Use communication constructively to develop and maintain effective relationships, mutual trust and confidence 3.3 Where language barriers exist, make efforts to communicate in the most effective way possible 3.4 Seek assistance from interpreters or other persons as required
4. Resolve cross-cultural misunderstandings	4.1 Identify issues that may cause conflict 4.2 If difficulties or misunderstandings occur, consider the impact of cultural differences 4.3 Make an effort to sensitively resolve differences, taking account of cultural considerations 4.4 Address any difficulties with appropriate people and seek assistance when required

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level required for this unit.

Essential knowledge:

The candidate must be able to demonstrate essential knowledge required to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the identified work role

This includes knowledge of:

- Availability of resources and assistance within and external to the organisation in relation to cultural diversity issues
- Own cultural conceptions and pre-conceptions and perspective of diverse cultures
- Recognition of cultural diversity in Australian society with many individuals living in

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REQUIRED SKILLS AND KNOWLEDGE

many cultures

- Recognition of cultural influences and changing cultural practices in Australia and its impact on diverse communities that make up Australian society
- Recognition of culture as a dynamic social phenomenon
- Recognition of culture as a range of social practices and beliefs evolving over time
- Recognition of impact of cultural practices and experiences on personal behaviour, interpersonal relationships, perception and social expectations of others
- Recognition of the unique way individuals may experience a culture and respond to past experiences
- Recognition that the word 'normal' is a value-laden, excluding concept that often precludes acknowledgment of the diversity of people, their life experiences and situations
- The principles of equal employment opportunity, sex, race, disability, anti-discrimination and similar legislation and the implications for work and social practices
- The role and use of language and cultural interpreters

Essential skills:

It is critical that the candidate demonstrate the ability to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the identified work role

This includes the ability to:

- Apply culturally respectful practices in the workplace and to demonstrate respect and inclusiveness of culturally diverse people in all work practices
- Form effective workplace relationships with co-workers and colleagues of diverse backgrounds and cultures
- Participate in identifying and implementing culturally safe work practices
- Respond respectfully and sensitively to cultural beliefs and practices that may cause harm
- Sensitively and respectfully communicate with persons of diverse backgrounds and cultures
- Use basic conflict resolution and negotiation skills
- Use effective strategies to address and eliminate discrimination and bias in the workplace

Evidence Guide

EVIDENCE GUIDE

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EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate this competency unit:

- The individual being assessed must provide evidence of specified essential knowledge as well as skills
- This unit is most appropriately assessed in the workplace or a simulated workplace environment under the normal range of work conditions
- Assessment should be conducted on more than one occasion to cover a variety of circumstances to establish consistency
- Holistic assessment of this competency unit is encouraged, to ensure application of these skills in conjunction with specific work functions but the unit may be delivered and assessed independently

Access and equity considerations:

- All workers in the health industry should be aware of access and equity issues in relation to their own area of work
- All workers should develop their ability to work in a culturally diverse environment
- In recognition of particular health issues facing Aboriginal and Torres Strait Islander communities, workers should be aware of cultural, historical and current issues impacting on health of Aboriginal and Torres Strait Islander people
- Assessors and trainers must take into account relevant access and equity issues, in particular relating to factors impacting on health of Aboriginal and/or Torres Strait Islander clients and communities

Range Statement

RANGE STATEMENT

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RANGE STATEMENT

The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.

Work practices may relate to:

- Dealing with persons of diverse gender, sexuality and age
- Compliance with duty of care policies of the organisation
- Collection and provision of information
- Communication
- Provision of assistance
- Contact with families and carers
- Physical contact
- Care of deceased persons
- Handling personal belongings
- Provision of food services

Work practices that are culturally appropriate would be non-discriminatory and free of bias, stereotyping, racism and prejudice.

Cultural diversity may include:

- Ethnicity
- Race
- Language
- Cultural norms and values
- Religion
- Beliefs and customs
- Kinship and family structure and relationships
- Personal history and experience, which may have been traumatic
- Gender and gender relationships
- Age
- Disability
- Sexuality
- Special needs

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RANGE STATEMENT

Communication may be:	• Verbal • Appropriate gestures and facial and physical expressions • Posture • Written • Signage • Through an interpreter or other person
Strategies to eliminate bias and discrimination may include:	• Cross cultural work teams • Cross cultural employee representation on committees • Workplace free of culturally insensitive literature, posters, signage • Inclusion in decision-making

Unit Sector(s)

Not Applicable

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ICAICT102A Operate word-processing applications

Modification History

Release	Comments
Release 1	This Unit first released with *ICA11 Information and Communications Technology Training Package version 1.0*

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to operate word-processing applications and perform basic operations, including creating and formatting documents, creating tables and printing labels.

Application of the Unit

This unit applies to workers who perform a range of routine tasks in the workplace using fundamental knowledge of word processing under direct supervision or with limited responsibility.

Operating a word-processing application is a core function and essential skill for most businesses.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement but users should confirm requirements with the relevant federal, state or territory authority.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Element	**Performance Criteria**
Elements describe the essential outcomes of a unit of competency.	*Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.*

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Elements and Performance Criteria

1. Apply OHS practices	1.1 Use workplace ***ergonomic work practices*** and strategies 1.2 Organise work area ensuring an ***ergonomic work environment***
2. Create documents	2.1 Open word-processing application, create document and add data according to ***information requirements*** 2.2 Use document templates as required 2.3 Use simple ***formatting tools*** when creating the document 2.4 Save document to directory
3. Customise basic settings to meet page layout conventions	3.1 Adjust page layout to meet information requirements 3.2 Open and view different toolbars 3.3 Change ***font format*** to suit the purpose of the document 3.4 Change alignment and line spacing according to document information requirements 3.5 Modify margins to suit the purpose of the document 3.6 Open and switch between several documents
4. Format documents	4.1 Use ***formatting features*** and styles as required 4.2 Highlight and copy text from another area in the document or from another active document 4.3 Insert headers and footers to incorporate necessary data 4.4 Save document in another ***file format*** 4.5 Save and close document to ***a storage device***
5. Create tables	5.1 Insert standard table into document 5.2 Change cells to meet information requirements 5.3 Insert and delete columns and rows as necessary 5.4 Use formatting tools according to style requirements
6. Add images	6.1 Insert appropriate ***images*** into document and customise as necessary 6.2 Position and resize images to meet document formatting needs
7. Print documents	7.1 Preview document in print preview mode

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	7.2 Select basic ***print settings*** 7.3 Print document or part of document from printer

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - communicate with peers and supervisors
  - seek assistance and expert advice
- literacy skills to:
  - interpret user manuals and help functions
  - read and write basic workplace documents
- problem-solving skills to address common operational problems when using word-processing applications
- technical skills to:
  - operate a personal computer (PC)
  - use a keyboard to enter text and numerical data.

Required knowledge

- formatting styles and their effect on formatting, readability and appearance of documents
- organisational requirements for ergonomics, such as work periods and breaks
- organisational style guide
- purpose, use and function of word-processing software.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the ability to: • follow OHS requirements • create, open and retrieve documents • customise basic settings • format documents • create tables • add text, objects and images • save and print documents.
Context of and specific resources for assessment	Assessment must ensure access to: • personal computer and printer • word-processing software currently used in industry • documents detailing organisational style guide or policy and OHS requirements • data suitable for use with word-processing packages • appropriate learning and assessment support when required. Where applicable, physical resources should include equipment modified for people with special needs.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • verbal or written questioning to assess candidate's knowledge of word-processing operations • direct observation of candidate creating and formatting documents • review of documents prepared by candidate demonstrating word-processing skills, including formatting, tables and images.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, where appropriate. Assessment processes and techniques must be culturally appropriate, and suitable to the communication skill level, language, literacy and numeracy capacity of the candidate and the work being performed.

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	Indigenous people and other people from a non-English speaking background may need additional support. In cases where practical assessment is used it should be combined with targeted questioning to assess required knowledge.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Ergonomic work practices may include:	• pause exercises
	• personal strategies:
	  • chair height
	  • footrests
	  • monitor and keyboard alignment
	  • monitor reflection angle
	• task and postural variety.

Ergonomic work environment may relate to:	• air quality • furniture and storage • lighting • noise • temperature.
Information requirements may include:	• agendas • letters • memos • minutes • other business documents required by the organisation.

Formatting tools may include:	• menu commands within the application:
	  • borders
	  • copy, cut and paste
	  • help
	  • find and replace
	  • shading
	  • spell check
	  • undo.

Font format may include:	• combination of typeface and other attributes:
	  • pitch and spacing
	  • size.

Formatting features may include:	• bold • hyphenation • italics • underline.

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File format may include:	• CSV files • doc files • HTML pages • PDF files • SXW (star office) files • RTF files • text files.
Storage device may include:	• CD • DVD • external hard drive, including universal serial bus (USB) flash drive • internal hard drive • web storage space.
Images may include:	• clip art • graphics • pictures.
Print settings may include:	• layout • number of copies • orientation • paper size • sides.

Unit Sector(s)

General ICT

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ICAICT103A Use, communicate and search securely on the internet

Modification History

Version	Comments
ICAICT103A	This version first released with *ICA11 Information and Communications Technology Training Package version 1.0*

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to connect to the internet, securely send and receive emails, search the internet using web browsers and interact securely and in a socially responsible manner with a range of different internet sites.

Application of the Unit

This unit applies to individuals who use business technology to perform a range of routine tasks in the workplace or home office. They use fundamental knowledge of internet connection requirements, email and web browsers to perform tasks under direct supervision or with limited responsibility.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement but users should confirm requirements with the relevant federal, state or territory authority.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Element	**Performance Criteria**
Elements describe the essential outcomes of a unit of competency.	*Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.*

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Elements and Performance Criteria

1. Connect to and access the internet	1.1 Connect to the internet through the existing ***internet connection*** and confirm functionality 1.2 Open an ***internet browser*** and set a home page of personal choice by setting ***internet options*** 1.3 Ensure internet ***browser software security*** 1.4 Adjust the display of the internet browser to suit personal requirements 1.5 Modify toolbar to meet user and internet browser needs 1.6 Access a particular website, note privacy and other conditions of use and retrieve data 1.7 Use ***socially responsible behaviour*** when sharing information on the internet 1.8 Enter uniform resource locator (URL) in address line of internet browser
2. Use email for communications	2.1 Open email application package, create new email message and add addressees 2.2 Compose the text of an email message according to ***organisational guidelines*** and spell check and edit text as required 2.3 Create and add an automatic signature for the user 2.4 Attach ***files*** to the email message where required 2.5 Determine and set a priority and send the email message 2.6 Reply to and forward a received message using available features 2.7 Open and save an attachment to the relevant folder 2.8 Search for, sort and save email message using available settings 2.9 Adjust email accounts to restrict and quarantine possible ***email security*** problems 2.10 Print an email message as required

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3. Search the internet	3.1 Review organisational guidelines on internet access 3.2 Open an internet application and locate and access a ***search engine*** on the internet and define search expressions based on the data required 3.3 Enter appropriate key words into the search engine to locate the desired information 3.4 Refine a search depending on outcomes of the original search 3.5 Save search expression results and present them in a report according to the information requirements 3.6 Create a bookmark within the internet browser or a link for the required web page for the key results 3.7 Save the key results in a bookmark folder 3.8 Modify the internet browser options for printing and print a web page 3.9 Close the internet browser
4. Access and use consumer-specific sites on the internet	4.1 Identify, access and review information-specific sites to gain consumer information 4.2 Identify and use ***internet application sites*** to lodge details and gain access and information 4.3 Access and use online forms on the internet
5. Undertake online transactions	5.1 Access an online transaction site 5.2 Ensure security of transaction site 5.3 Enter required information into fields on merchant's website 5.4 Ensure that pop-up dialog boxes, prompts or feedback mechanisms are completed 5.5 Enter, check and make changes to preferred ***transaction options*** 5.6 Complete online transaction 5.7 Record and archive receipts according to business processes 5.8 Close down and leave transaction process

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6. Conduct an advanced search	6.1 Use search tools and advanced search features 6.2 Use ***Boolean search*** techniques when required to enhance the search 6.3 Use multiple or meta-search tools with a range of key words 6.4 Use search engines particular to a field of knowledge to refine the outcome 6.5 Access related virtual community sites and newsgroups and note their objectives and operational arrangements 6.6 Conduct a search with domain names to refine the search
7. Use information that has been located	7.1 Cross-reference information found by using several websites to determine accuracy of information obtained 7.2 Check date that website was last updated or properties of website to determine currency of information 7.3 Determine website authority by looking at copyright statements, privacy statements and organisational information 7.4 Save and print information found in different file forms

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - communicate with peers and supervisors
  - seek assistance and expert advice
  - undertake online transactions
- literacy skills to:
  - compose email messages
  - interpret user manuals and help functions
  - read and interpret basic online documents
  - read and write basic workplace documents
- problem-solving skills to address common operational problems when using web browsers
- research skills to locate varied sources of information online
- technical skills to use:
  - digital device
  - email applications
  - internet search functions
  - peripheral hardware
  - keyboard to enter text into web browsers and email applications.

Required knowledge

- basic technical terminology related to reading help files and prompts
- basic knowledge of copyright and privacy statements
- different types of messages that occur, such as:
  - error messages
  - message to install plug-ins
- different types of search engines
- procedures for using email applications
- procedures for evaluating and assessing the authority, reliability and authenticity of information
- internet search functions
- internet speed, traffic loads related to times of accessing the internet
- internet web browsers
- makeup and structure of internet addresses
- organisational guidelines on internet and email use (web etiquette or netiquette)
- different internet search techniques
- web browser update techniques
- use of key words and bookmarks.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the ability to: • connect to and access the internet • send and receive emails • secure internet access and email communications • use search tools to locate information • research and select appropriate website • undertake online interactions • make an informed assessment of the accuracy, currency, authority and reliability of the site and information located.
Context of and specific resources for assessment	Assessment must ensure access to: • use of PC or digital device with internet • search engines currently used in industry • organisational policies on internet usage • appropriate learning and assessment support when required. Where applicable, physical resources should include equipment modified for people with special needs.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • verbal or written questioning to assess candidate's knowledge of internet access requirements, email features and search engine attributes • direct observation of candidate accessing the internet, using email, and searching and interacting with consumer sites using advanced search features • direct observation of candidate undertaking online interactions • review of search results, including assessment of the accuracy, currency and reliability of the site and information located.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, where appropriate. Assessment processes and techniques must be culturally appropriate, and suitable to the communication skill level, language, literacy and numeracy capacity of the candidate and the work being performed. Indigenous people and other people from a non-English speaking

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	background may need additional support. In cases where practical assessment is used it should be combined with targeted questioning to assess required knowledge.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Internet connection may include:	• 3G or high-speed downlink packet access (HSDPA) cellular network • 4G cellular network • broadband • cable • dial-up • digital subscriber line (DSL) • fibre to the 'x' (FTTx) • high-speed digital subscriber line (HSDSL) • integrated services digital network (ISDN) network terminating unit (NTU) • satellite • wireless modem • worldwide interoperability for microwave access (WiMAX).
Internet browser may include:	• Firefox • Galleon • Google Chrome • Internet Explorer • Konqueror • Lynx • Mozilla • Netscape Navigator • Opera • Phoenix.

Internet options may include:	• configuring:
	  • history
	  • home page
	  • location of temporary files
	  • privacy level
	  • security level
	  • type of connection.

Browser software	• application enabling • cookie handling

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security may include:	• pop-up blocking • privacy levels • security zones • trusted sites.
Socially responsible behaviour may relate to:	• not using obscene, profane, lewd, vulgar, rude, inflammatory or threatening language • not publishing information that, if acted upon, could cause damage to property or persons, nor publish deliberately false or defamatory information about a person or organisation • not engaging in personal attacks, including prejudicial or discriminatory attacks, not harass (distress or annoy) another person • not accessing material that is profane, obscene, pornographic or paedophilic, that promotes illegal acts, or that advocates violence or discrimination • not sending inappropriate emails • taking responsibility for protecting personal information by not revealing personal information, including names, addresses, photographs, credit card details and telephone numbers.
Organisational guidelines may include:	• content of emails • downloading information and accessing particular websites • opening mail with attachments • personal use of emails and internet access • virus risk (MS Windows OS and Mac OS only).
Files may include:	• email messages • HTML pages • music • PDF files • pictures • text files.

Email security may relate to:	• taking steps to restrict:
	  • malware
	  • phishing
	  • spam.

Search engine may include:	• Alexa Internet • AllTheWeb • AltaVista • Bing • Cuil

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	• Excite • Galaxy • GigaBlast • Go.com • Google • HotBot • Live Search • Lycos • search.AOL • specific search engines • Yahoo.

Internet application sites may include:	• consumer:
	  • banking
	  • shopping
	• education and training
	• government
	• health
	• interest groups
	• news
	• travel.

Transaction options may include:	• currency • delivery address • freight • invoice address.
Boolean search may include terms:	• AND • OR • NOT • NAND • NOR • NE • GE • LE • GT • LT.

Unit Sector(s)

General ICT

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Custom Content Section

Not applicable.

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ICAICT105A Operate spreadsheet applications

Modification History

Release	Comments
Release 1	This Unit first released with *ICA11 Information and Communications Technology Training Package version 1.0*

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to operate spreadsheet applications and perform basic operations, including creating and formatting spreadsheet data, incorporating charts and objects, and customising and printing spreadsheets.

Application of the Unit

This unit applies to individuals who perform a range of routine tasks in the workplace using a fundamental knowledge of spreadsheets under direct supervision or with limited responsibility.

The use of spreadsheets for business and mathematical applications is widespread. In some cases, spreadsheets can operate as sophisticated computerised ledgers and enable the collation, manipulation and presentation of complex data.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement but users should confirm requirements with the relevant federal, state or territory authority.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Element	Performance Criteria
Elements describe the essential outcomes of a unit of competency.	*Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.*

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Elements and Performance Criteria

1. Create spreadsheets	1.1 Open spreadsheet application, create spreadsheet files and enter numbers, text and symbols into cells according to information requirements 1.2 Enter ***simple formulas and functions*** using cell referencing where required 1.3 Correct formulas when error messages occur 1.4 Use a range of common tools during spreadsheet development 1.5 Edit columns and rows within the spreadsheet 1.6 Use the auto-fill function to increment data where required 1.7 Save spreadsheet to directory or folder
2. Customise basic settings	2.1 Adjust page ***layout*** to meet user requirements or special needs 2.2 Open and view different ***toolbars*** 2.3 Change ***font settings*** so that they are appropriate for the purpose of the document 2.4 Change ***alignment*** options and line spacing according to spreadsheet ***formatting features*** 2.5 ***Format*** cell to display different styles as required 2.6 Modify margin sizes to suit the purpose of the spreadsheets 2.7 View multiple spreadsheets concurrently
3. Format spreadsheet	3.1 Use formatting features as required 3.2 Copy selected formatting features from another cell in the spreadsheet or from another active spreadsheet 3.3 Use ***formatting tools*** as required within the spreadsheet 3.4 Align information in a selected cell as required 3.5 Insert headers and footers using formatting features 3.6 Save spreadsheet in another format 3.7 Save and close spreadsheet to ***storage device***
4. Incorporate object and chart in spreadsheet	4.1 Import an object into an active spreadsheet 4.2 Manipulate imported ***object*** by using formatting features 4.3 Create a chart using selected data in the spreadsheet 4.4 Display selected data in a different chart 4.5 Modify chart using formatting features

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5. Print spreadsheet	5.1 Preview spreadsheet in print preview mode 5.2 Select basic printer options 5.3 Print spreadsheet or selected part of spreadsheet 5.4 Submit the spreadsheet to ***appropriate person*** for approval or feedback

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - communicate with peers and supervisors
  - seek assistance and expert advice
- literacy skills to:
  - interpret user manuals and help functions
  - read and write basic workplace documents
- numeracy skills to enter simple formulas into spreadsheet
- problem-solving skills to address common operational problems when using spreadsheet applications
- technical skills to:
  - operate a personal computer (PC)
  - use a keyboard to enter text and numerical data.

Required knowledge

- basic technical terminology related to reading help files and prompts
- formatting styles and their effect on formatting, readability and appearance of spreadsheets
- log-in procedures relating to accessing a PC
- purpose, use and function of spreadsheet application.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the ability to: • create spreadsheets • customise basic settings • format spreadsheets • create basic formulas • work with objects and charts in spreadsheets • save and print spreadsheets.
Context of and specific resources for assessment	Assessment must ensure access to: • use of PC and printer • use of spreadsheet software currently used in industry • documents detailing organisational style guide and policy • documents or information containing data suitable for creating spreadsheets • appropriate learning and assessment support when required. Where applicable, physical resources should include equipment modified for people with special needs.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • verbal or written questioning to assess candidate's knowledge of spreadsheet operations • direct observation of candidate creating and formatting spreadsheets • review of spreadsheets, including formatting, formulas, objects and images.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, where appropriate. Assessment processes and techniques must be culturally appropriate, and suitable to the communication skill level, language, literacy and numeracy capacity of the candidate and the work being performed. Indigenous people and other people from a non-English speaking

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	background may need additional support. In cases where practical assessment is used it should be combined with targeted questioning to assess required knowledge.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Simple formulas and functions may include:	• addition • division • multiplication • subtraction • application of the above to a series of cells.
Tools may include:	• help • search and replace • simple formatting tools • spell check • undo.
Edit may relate to:	• adding • copying • deleting • moving • pasting • selecting.
Data may include:	• symbols added to the document • text added to the document.
Layout may include:	• display modes • orientation • size.
Toolbars may contain:	• buttons • menus • a combination of both.
Font settings may include:	• colour • size • type.
Alignment may refer to:	• centred • justified • left • right.
Formatting features may include:	• bold • hyphenation

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	• italics • underline.

Format may refer to:	• saving the spreadsheet as another type of document:
	  • comma separated values or text
	  • HTML
	  • XML.

Formatting tools may include:	• menu commands within the application:
	  • copy
	  • cut
	  • help
	  • paste
	  • search and replace
	  • spell check
	  • undo.

Storage device may include:	• disks:
	  • CD
	  • DVD
	  • blu-ray
	• external hard drive, such as universal serial bus (USB) flash drive
	• internal hard drive
	• web storage area.

Object may include:	• items that can be inserted into the spreadsheet, such as:
	  • other documents
	  • pictures
	  • sound.

Appropriate person may include:	• authorised business representative • client • supervisor.

Unit Sector(s)

General ICT

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ICAICT201A Use computer operating systems and hardware

Modification History

Release	Comments
Release 1	This Unit first released with *ICA11 Information and Communications Technology Training Package version 1.0*

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to select, configure and use computer operating systems and basic computer hardware.

Application of the Unit

This unit applies to workers who require the information and communications technology (ICT) skills to select and install operating system software on to a specific hardware configuration. This includes configuring the operating system to work with a variety of hardware peripherals and types of ICT equipment.

The ability to communicate effectively, simplify and solve technical incompatibility conflicts and problems are key components of this ICT support role.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement but users should confirm requirements with the relevant federal, state or territory authority.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Element	**Performance Criteria**
Elements describe the essential outcomes of a unit of competency.	*Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.*

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Elements and Performance Criteria

1. Identify operating system and hardware components	1.1 Determine ICT ***organisational requirements*** and specifications 1.2 Identify and select ***operating system*** 1.3 Identify appropriate ***external hardware components*** 1.4 Identify ***internal hardware components***
2. Install and configure operating system and application software with hardware components	2.1 Install and configure operating system to meet organisational requirements 2.2 Identify the functions associated with the operating system and associated boot process 2.3 Configure ***power-management settings*** to minimise power consumption as an environmentally sustainable measure 2.4 Use both the graphical user interface and the command line interface to perform basic tasks 2.5 Install or upgrade ***application software*** onto the operating system and hardware configuration 2.6 Determine the relationship between an application program, the operating system and hardware 2.7 Identify general differences between the different ***computer platforms*** and their respective operating systems
3. Optimise operating system and hardware components	3.1 Optimise operating system using included tools or ***third-party utilities*** 3.2 Customise the graphical user interface 3.3 Use techniques unique to the command line interface 3.4 Set up and configure external hardware components and check functionality 3.5 Install drivers as appropriate and check functionality

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - communicate with peers and supervisors
  - seek assistance and expert advice
- literacy skills to:
  - interpret user manuals and help functions
  - read and write basic workplace documents
- problem-solving skills to address common operational problems when using computer operating systems and operating computer hardware
- technical skills to:
  - apply user changes for a multi-user operating system
  - configure, use and optimise operating system
  - create users for a multi-user system
  - install and support peripheral devices
  - operate a personal computer (PC)
  - set passwords for different users
  - use PC peripheral hardware.

Required knowledge

- basic knowledge of current industry-accepted operating system, hardware and software products
- compatibility of an operating system, in respect to other versions
- function of single-user and multi-user operating systems
- interoperability between operating systems
- OHS principles and responsibilities, including ergonomic principles to avoid injury associated with using computer systems.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the ability to:
	• use an operating system in a variety of scenarios and across functions, including:
	  • scheduling, loading, initiating, and supervising the execution of programs
	  • allocating storage
	  • initiating and controlling input and output operations
	  • handling errors
	• identify and install suitable hardware components
	• install and upgrade application software.

Context of and specific resources for assessment	Assessment must ensure access to: • use of PC • use of hardware components • OHS standards and organisational policy and procedures • use of operating system currently used in industry • software configuration guides • documents detailing operating system control panel and configuration data • appropriate learning and assessment support when required. Where applicable, physical resources should include equipment modified for people with special needs.

Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:
	• verbal or written questioning to assess candidate's knowledge of concepts and procedures related to configuring operating systems and application software to different hardware platforms
	• direct observation of candidate:
	  • setting up, configuring and optimising operating system,
	  • setting up input and output devices and checking functionality
	  • setting up and configuring hardware components.

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Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, where appropriate. Assessment processes and techniques must be culturally appropriate, and suitable to the communication skill level, language, literacy and numeracy capacity of the candidate and the work being performed. Indigenous people and other people from a non-English speaking background may need additional support. In cases where practical assessment is used it should be combined with targeted questioning to assess required knowledge.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Organisational requirements may include:	• maintenance procedures • OHS procedures • security procedures.
External hardware components may include:	• Bluetooth device • fax • modem • keyboard • laptop • mobile phone • monitor • mouse • multimedia kit • PC • personal digital assistant (PDA), such as palmtop • printer • scanner • speaker • tape cartridge • universal serial bus (USB) device • wi-fi router.
Internal hardware components may include:	• cabling • central processing unit (CPU) • memory chip • motherboard • network interface card • sound card • video display card.
Power-management settings after a period of non-use may include:	• automatic power off • hibernation settings • monitor power-saver settings.
Application software may include:	• databases • email • internet browsers

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	• spreadsheets • system browsers • word processing.
Computer platforms may include:	• Macintosh • PC • operating systems used on each.
Third-party utilities may include:	• backing up data • diagnostic tools • disk scanning • partitioning and defragmenting • recovery.

Unit Sector(s)

General ICT

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ICAICT210A Operate database applications

Modification History

Release	Comments
Release 1	This Unit first released with *ICA11 Information and Communications Technology Training Package version 1.0*

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to operate database applications and perform basic operations.

Application of the Unit

This unit applies to individuals who create and design databases using pre-existing data (e.g. documents, spreadsheet data, and data from database tables) or create new data when creating and manipulating databases and tables.

They may provide administrative support working under direct supervision or with limited responsibility.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement but users should confirm requirements with the relevant federal, state or territory authority.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Element	Performance Criteria
Elements describe the essential outcomes of a unit of competency.	*Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.*

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Elements and Performance Criteria

1. Create database	1.1 Open a database application and design a two-table simple relational database incorporating basic ***design principles*** 1.2 Develop a table with fields and ***attributes*** according to database usage, as well as user requirements 1.3 Create a primary key and establish an index for each table 1.4 Modify table layout and field ***attributes*** as required 1.5 Create a ***relationship*** between the two tables 1.6 Add and modify data in a table according to information requirements 1.7 Add and delete records as required 1.8 Save and close down database to ***storage area***
2. Customise basic settings	2.1 Adjust ***page layout*** to meet user requirements 2.2 Open and view different ***toolbars*** 2.3 Format ***font*** as appropriate for the purpose of the database entries
3. Create reports	3.1 Design reports to present data in a logical sequence 3.2 Modify reports to include or exclude additional requirements 3.3 Distribute reports to ***appropriate person*** in a suitable format
4. Create forms	4.1 Use a wizard to create a simple form 4.2 Open existing database and modify records through a simple form 4.3 Rearrange ***objects*** within the form to accommodate information requirements
5. Retrieve information	5.1 Access existing database and locate required records 5.2 Create simple query and retrieve required information 5.3 Develop query with multiple criteria and retrieve required information 5.4 Select data and display appropriately

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - communicate with peers and supervisors
  - seek assistance and expert advice
- literacy skills to:
  - interpret user manuals and help functions
  - read and write basic workplace documents
- numeracy skills to create simple queries
- problem-solving skills to address inconsistencies in data and issues in database
- technical skills to create a simple database.

Required knowledge

- basic database design
- forms, reports and queries for retrieving and displaying information
- relationships between tables (cardinality)
- purpose, use and function of database software.

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the ability to: • design and develop a simple database using a standard database package • add data • use queries • create forms and reports.
Context of and specific resources for assessment	Assessment must ensure access to: • use of PC and printer • use of database software currently used in industry • documents detailing organisational style guide and policy • documents or information containing data suitable for creating a database • appropriate learning and assessment support when required. Where applicable, physical resources should include equipment modified for people with special needs.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • verbal or written questioning to assess candidate's knowledge of database operations • direct observation of candidate creating and manipulating databases and retrieving information • review of forms and reports prepared that demonstrate database application skills.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, where appropriate. Assessment processes and techniques must be culturally appropriate, and suitable to the communication skill level, language, literacy and numeracy capacity of the candidate and the work being performed. Indigenous people and other people from a non-English speaking background may need additional support.

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	In cases where practical assessment is used it should be combined with targeted questioning to assess required knowledge.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Design principles may include:	• data layout • formatting • naming conventions.
Attributes may include:	• data type • name • size.
Relationship may be:	• one-to-one • one-to-many • many-to-many.
Storage area may include:	• CD • DVD • external hard drive, such as universal serial bus (USB) flash drive • internal hard drive • web area.
Page layout may include:	• landscape • portrait.
Toolbars may contain:	• buttons • menus • a combination of both.

Font may include:	• combination of typeface and other attributes:
	  • pitch
	  • size
	  • spacing character
	  • symbol.

Appropriate person may include:	• authorised business representative • client • supervisor.
Objects may include:	• buttons • checkboxes • drop down lists • option buttons

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	• text boxes.

Unit Sector(s)

General ICT

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LGAPLEM502A Apply ecologically sustainable development principles to the built environment

Modification History

Not Applicable

Unit Descriptor

Not Applicable

Application of the Unit

Not Applicable

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Not Applicable

Employability Skills Information

Not Applicable

Elements and Performance Criteria Pre-Content

Not Applicable

Elements and Performance Criteria

Not Applicable

Required Skills and Knowledge

Not Applicable

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Evidence Guide

Not Applicable

Range Statement

Not Applicable

Unit Sector(s)

Not Applicable

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LMFFM3006B Install furnishing

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit applies to employees engaged in the installation of furnishing products to a given plan

Application of the Unit

Application of the unit	

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units	Nil	

Employability Skills Information

Employability skills	This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare the work	1.1. Work instructions are used to determine job requirements, including: location, type of installation, tolerances, process, finish and quality 1.2. Installation location and sequence are planned 1.3. Procedures are determined for checking quality at each stage of the process 1.4. Workplace health and safety requirements, including personal protection needs, are observed throughout the work 1.5. Hardware, fittings and attachments are collected 1.6. Tools and equipment suitable for installation are identified and checked for safe and effective operation 1.7. Fixing and joining devices are selected in line with work instructions and types of materials 1.8. Required installation aids are selected and checked for suitability for purpose
2. Complete installation	2.1. Site is prepared for installation 2.2. Furnishing products are prepared to site requirements 2.3. Hand and/or power tools and equipment are used in accordance with workplace requirements, including use of personal protective equipment 2.4. Fixing methods are undertaken according to site conditions 2.5. Installed furniture product is checked for compliance with specification 2.6. Tops and/or appliances are installed in accordance with plans and specifications 2.7. Hardware and decorative accessories are installed 2.8. Work is checked against required quality standards
3. Finalise operation clean work site	3.1. Work site is cleaned, hand and/or power tools are checked for serviceable condition, returned and stored in accordance with workplace procedures 3.2. Unused materials are returned and/or stored 3.3. Waste and scrap materials are dealt with following workplace procedures

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- collect, organise and understand information related to work orders, installation plans and safety procedures
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including the preparation and layout of the worksite and the obtaining of equipment and materials to avoid any back tracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to correctly complete measurements, calculate area and estimate material requirements
- use pre-checking and inspection techniques to anticipate installation problems, avoid reworking and avoid wastage
- use the limited workplace technology related to the installation, including tools, equipment and measuring devices

Required knowledge

- the interpretation of plan representation of furniture design
- the preparation of drawings/set-outs
- workflow in relation to furniture production
- identification of hand and/or power tools, materials, equipment, processes and procedures

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	

Critical Aspects of Evidence	• Interpret work order and locate and apply relevant information
	• Follow work instructions, operating procedures and inspection practices to:
	  • minimise the risk of injury to self or others
	  • prevent damage to goods, tools, equipment or products
	  • maintain required production output and product quality
	• Install four different and significant furnishing products, including at least:
	  • one floor mounted, and
	  • one wall mounted
	• Work effectively with others
	• Modify activities to cater for variations in workplace context and environment

Resource Implications	Access to plans, hand and/or power tools, equipment, materials, woodworking machinery, furnishing products and a work area.
Method of Assessment	Assessment methods must confirm consistency of performance over time and in a range of workplace relevant contexts. Assessment should be by direct observation of tasks and questioning on underpinning knowledge. Assessment should be conducted over time and may be in conjunction with assessment of other units of competency.
Context of Assessment	Assessment may occur on the job or in a workplace simulated facility with relevant process equipment, materials, work instructions and deadlines.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Furnishing products for installation may include but are not limited to:	• kitchen cabinets • bathroom cabinets • wall units • desks • counters • wardrobes • dressing tables • entertainment units • laundry cabinets
Appliances to be installed may include but are not limited to:	• ovens • range hoods • sinks • basins • cooktops • refrigerators
Unit context	• OH&S requirements include legislation, building codes, material safety management systems, hazardous substances and dangerous goods code and local safe operating procedures • Work is carried out in accordance with legislative obligations, environmental legislation, relevant health regulations, manual handling procedures and organisation insurance requirements • Work requires individuals to demonstrate some discretion, judgement and problem solving skills in the installation of furnishing products • Competency may be demonstrated on work sites of enterprises involved in the installation of solid timber furniture, domestic furniture, commercial furniture, kitchen and bathroom cabinets
Tools and equipment may	• measuring tapes or rulers

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RANGE STATEMENT	
include but not be limited to:	• hammers • mallets • squares • bevels • chisels • levels • plumb lobs • planes • hand saws • power saws • power plainers • cordless drills • screwdrivers • power drills • explosive fixing gun • clamps • supporting devices • screwdrivers
Materials to be used may include but are not limited to:	• timber • manufactured board • laminates • granite • marble • stainless steel • adhesives • screws • nails • masonry anchors • dowels • cavity wall fixing
Product checking is to cover:	• level • plumb • twirl • and alignment of doors and/or drawers
Personal protective equipment	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices
Information and procedures	• Workplace procedures relating to the use of tools and equipment • Work instructions, including job sheets,

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RANGE STATEMENT	
	cutting lists, plans, drawings and designs • Workplace procedures relating to reporting and communication • Manufacturers' specifications and operational procedures

Unit Sector(s)

Unit sector	Furniture Making

Competency field

Competency field	

Co-requisite units

Co-requisite units		

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LMFFM3013B Measure and draw site layout for manufactured furniture products

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit covers the competency to measure and record site layout details to provide an accurate basis for both manufacture and installation of furniture products

Application of the Unit

Application of the unit	

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units	Nil	

Employability Skills Information

Employability skills	This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Obtain measurements	1.1. The purpose of obtaining measurements is clarified and confirmed 1.2. The most appropriate method of obtaining the measurement is selected and applied 1.3. Accurate measurements are obtained, confirmed and recorded 1.4. Calculations required for the measurement or validation are selected and correctly applied 1.5. Quality assurance requirements, standards and tolerances associated with enterprise operations are recognised and adhered to
2. Draw site layout	2.1. The intended use of the site is clarified and confirmed 2.2. A site plan is prepared showing all features and measurements 2.3. A site elevation is completed showing all features and measurements 2.4. The details of the proposed furniture products, including all relevant dimensions are incorporated into the plan and elevation 2.5. Unique and non-complying features which may impact on manufacture and/or installation are highlighted and referred to the appropriate party

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- collect, organise and understand information related to work orders, plans and safety procedures
- communicate ideas and information to enable confirmation of work requirements and specifications and the reporting of work outcomes and problems
- plan and organise activities to avoid any back tracking or workflow interruptions
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow
- use mathematical ideas and techniques to correctly complete measurements, calculate area, perimeter, volume, mass, scales and ratios and estimate material requirements
- use pre-checking techniques to anticipate measurement and drawing problems and avoid reworking
- use workplace technology related to measurement and drawing, including tools, equipment, calculators and measuring devices

Required knowledge

- furniture design and planning criteria
- drawing techniques, technologies and processes
- furniture installation methods, criteria and techniques
- structural geometry
- measurement techniques and equipment/tools
- the theory and practice of calculations (addition, subtraction, multiplication, division)
- conventional signs and markings for plans and drawings

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Critical Aspects of Evidence	• Identify the factors relevant to the measurements and drawings • Communicate effectively to enable accurate calculations, measurements and drawings • Accurately measure and record particulars for required sector sites and materials • Draw accurate, scaled plans and elevations relevant to the site using manual or computer-aided methods • Superimpose the furniture product accurately to scale onto the plan and elevation • Identify and communicate on measurements and dimensions which may impact on manufacture and/or installation
Resource Implications	Information on the site and products for measurement and calculation, suitable work area appropriate to the activity, suitable site plans/drawings and/or specifications, and measuring, calculating and recording devices.
Method of Assessment	Assessment methods must confirm consistency of performance over time and in a range of workplace relevant contexts. Assessment should be by direct observation of tasks and questioning on underpinning knowledge. Assessment should be conducted over time and may be in conjunction with assessment of other units of competency.
Context of Assessment	Assessment may occur on the job or in a workplace simulated facility with relevant process equipment, materials, work instructions and deadlines.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Unit scope	This unit applies to the measurement and drawing of site layout related to the manufacture and installation of furniture, cabinets, glass, soft furnishings, upholstery, picture framing, and floor covering products
Drawing	Drawing may be manual or computer aided
Measurements	Measurements are to be in metric scale, cover all dimensions of the site and furnishings and involve the use of rulers, tape measures, squares and service detectors. They may involve laser or equivalent technology
Critical dimensions that may impact on manufacture and installation include:	• the square of the structure • angles floor to walls • walls to ceiling • vertical walls • horizontal floor and ceiling • service locations and critical structural criteria
Calculations to include:	• area • perimeter • volume • mass • scales and ratios (ingredients/elements and triangulation) and require the application of addition • subtraction • multiplication and division processes • Calculations are to be performed both manually and with the aid of a calculator
Unit context	• Workplace health and safety requirements may include OH&S legislation, building codes, material safety management systems, hazardous substances and dangerous goods

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RANGE STATEMENT	
	codes and local safe operating procedures • Work is carried out in accordance with legislative obligations, environmental legislation, relevant health regulations, manual handling procedures and organisation insurance requirements
Personal protection equipment	Personal protective equipment is to include that prescribed under legislation, regulation and enterprise policies and practices
Information and procedures	• Workplace procedures relating to the measuring and drawing of site layouts • Work instructions, including job sheets, plans, drawings and designs • Workplace procedures relating to reporting and communication • Manufacturers' specifications and operational procedures

Unit Sector(s)

Unit sector	Furniture Making

Competency field

Competency field	

Co-requisite units

Co-requisite units		

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LMFFM3028B Fabricate synthetic solid surface products

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit covers the competency to fabricate synthetic solid surface furniture and furnishing products

Application of the Unit

Application of the unit	

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units	Nil	

Employability Skills Information

Employability skills	This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Work instructions are used to determine job requirements, including design, tolerances, process, materials, finish and quantity 1.2. Fabrication sequence are planned 1.3. Procedures are determined for checking quality at each stage of the process 1.4. Workplace health and safety requirements, including personal protection needs, are observed throughout the work 1.5. Suitable work area is selected for the task 1.6. Preparatory drawings and set-outs for tasks are completed 1.7. Cutting list for components is developed 1.8. Materials are selected following work instructions 1.9. Tools and equipment suitable for fabrication are identified and checked for safe and effective operation
2. Complete fabrication	2.1. Materials are set out and prepared according to work instructions and components are marked according to industry practices 2.2. Tools, machines and equipment are used in accordance with safety requirements and manufacturers' specifications 2.3. Components are fabricated and checked against set-outs for accuracy tolerances, fit and distortion 2.4. Doors, drawers, shelves or decorative treatments are fitted as required 2.5. Product is prepared for final finish, including the removal of bruises, scratches, dents and marks 2.6. Product is checked against plans at identified checkpoints
3. Finalise operation	3.1. Faulty and/or defective equipment is tagged and reported in accordance with workplace practices 3.2. Work area is cleaned, hand and/or power tools and equipment are cleaned, maintained and stored in accordance with workplace procedures 3.3. Off-cuts and unused materials are collected and stored for reuse or disposed following workplace procedures 3.4. Waste and scrap materials are dealt with following

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ELEMENT	PERFORMANCE CRITERIA
	workplace procedures

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• collect, organise and understand information related to synthetic solid surface materials, work orders, plans and safety procedures • communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, and the reporting of work outcomes and problems • plan and organise activities, including the preparation and layout of the worksite and the obtaining of equipment and materials to avoid any back tracking, workflow interruptions or wastage • work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity • use mathematical ideas and techniques to correctly complete measurements, calculate area and estimate material requirements • use pre-checking and inspection techniques to anticipate fabrication problems, avoid reworking and avoid wastage • use the limited workplace technology related to fabrication, including tools, equipment and measuring devices
Required knowledge
• the types, characteristics, uses and limitations of synthetic solid surface materials • the interpretation of plan representation of furniture design • the preparation of drawings and set-outs • identification of hand and/or power tools, materials, machines, equipment, processes and procedures • workflow in relation to furniture production

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	

Critical Aspects of Evidence	• Interpret work order and locate and apply relevant information
	• Apply safe handling requirements for equipment, products and materials, including use of personal protective equipment
	• Follow work instructions, operating procedures and inspection processes to:
	  • minimise the risk of injury to self or others
	  • prevent damage to goods, equipment or products
	  • maintain required production output and product quality
	• Fabricate a minimum of three synthetic solid surface material products, including at least one full benchtop
	• Work effectively with others
	• Modify activities to cater for variations in workplace context and environment

Resource Implications	Access to plans, hand and/or power tools, machines, equipment, materials, and a work area.
Method of Assessment	Assessment methods must confirm consistency of performance over time and in a range of workplace relevant contexts. Assessment should be by direct observation of tasks and questioning on underpinning knowledge. Assessment should be conducted over time and may be in conjunction with assessment of other units of competency.
Context of Assessment	Assessment may occur on the job or in a workplace simulated facility with relevant process equipment, materials, work instructions and deadlines.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Synthetic solid surface products	• Synthetic solid surface products are generally acrylic or polyester sheet based materials • There are a range of commercially licensed products, including Corian, Aztec, Trezzini and others
Synthetic solid surface products are to include benchtops and may include:	• edges • sinks • bowls • other containers and waterproof wall treatments
Unit context	• OH&S requirements include legislation, building codes, material safety management systems, hazardous substances and dangerous goods code and local safe operating procedures • Work is carried out in accordance with legislative obligations, environmental legislation, relevant health regulations, manual handling procedures and organisation insurance requirements • Work involves reading and interpreting plans, developing set-outs, using hand and/or power tools, equipment and operating machinery
Tools and equipment may include, but are not limited to:	• measuring tapes or rulers • hammers • mallets • squares • bevels • chisels • planes • hand saws • power saws • power drills/screwdrivers • air compressor and hoses • clamps

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RANGE STATEMENT	
	• screwdrivers • pincers
Machines may include, but are not limited to:	• panel saws • routers • edge moulders • point to point • heat applicators • sanding and buffing machines
Materials to be used may include but are not limited to:	• synthetic solid surface materials • timber • manufactured board • glues • screws • nails • dowels • knockdown fittings
Personal protective equipment	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices
Information and procedures	• Workplace procedures relating to the use of tools and equipment • Work instructions, including job sheets, cutting lists, plans, drawings and designs • Workplace procedures relating to reporting and communication • Manufacturers' specifications and operational procedures

Unit Sector(s)

Unit sector	Furniture Making

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Competency field

Competency field	

Co-requisite units

Co-requisite units		

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LMFFM3030B Set up, operate and maintain CNC sizing machines

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit covers the competency to set up, operate and maintain CNC sizing machines to produce furniture or components

Application of the Unit

Application of the unit	

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units	Nil	

Employability Skills Information

Employability skills	This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Work instructions are used to determine job requirements, including: design, quality, materials, equipment and quantities 1.2. Workplace health and safety requirements, including personal protection needs, are observed throughout the work 1.3. Material for machining is selected and inspected for appropriate quality 1.4. Procedures are determined for minimising waste material 1.5. Procedures are identified for maximising energy efficiency while completing the job
2. Set up machines	2.1. CNC program is set to job requirements 2.2. Safety equipment, including emergency stops, gauges, guards and controls are checked 2.3. Machine settings and adjustments are made in accordance with job requirements and machine and tool manufacturers' instructions 2.4. Machines, cutting tools and jigs are checked for safe and effective operation 2.5. Trial runs are conducted to check machine operation and quality of finished work 2.6. Final adjustments are made to CNC programs and equipment according to workplace procedures
3. Operate machines	3.1. Machines are operated and monitored to ensure product quality and output 3.2. Waste quantities are checked and minimised 3.3. Problems with the required work are identified and reported to appropriate persons 3.4. Items that do not meet quality requirements are repaired, recycled or discarded according to workplace procedures 3.5. Any authorised changes in working procedures are followed
4. Clean up work area and maintain equipment	4.1. Material that can be reused is collected and stored 4.2. Waste and scrap are removed following workplace procedures 4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with

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ELEMENT	PERFORMANCE CRITERIA
	workplace procedures 4.4. Operator maintenance is completed in accordance with manufacturers' specifications and site procedures 4.5. Unserviceable equipment is tagged and faults identified in accordance with workplace 4.6. Equipment and tooling is maintained in accordance with workplace procedures

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
• collect, organise and understand information related to CNC sizing operations, work orders, plans and safety procedures • communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, and the reporting of work outcomes and problems • plan and organise activities, including the preparation and layout of the worksite and the obtaining of equipment and materials to avoid any back tracking, workflow interruptions or wastage • work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity • use mathematical ideas and techniques to correctly complete measurements, compute input data and estimate material requirements • use pre-checking and inspection techniques to anticipate CNC sizing problems, avoid reworking and avoid wastage • use the workplace technology related to CNC sizing, including machinery, tools, equipment and measuring devices
Required knowledge
• types, characteristics, uses and limitations of CNC sizing machines • CNC theory, practices and techniques • characteristics of materials used and uses of products produced • workflow processes • procedures for reporting materials, product or equipment faults

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	

Critical Aspects of Evidence	• Locate, interpret and apply relevant information
	• Apply safe handling requirements for equipment, products and materials, including use of personal protective equipment
	• Identify materials used in the work process
	• Follow work instructions, operating procedures and inspection practices to:
	  • minimise the risk of injury to self or others
	  • prevent damage to goods, equipment or products
	  • maintain required production output and product quality
	• Identify, set up and operate CNC sizing equipment, including the use of safety cut-outs and guards, to product a range of complex cutting patterns to its full potential
	• Conduct operator maintenance on the machine and related equipment
	• Work effectively with others
	• Modify activities to cater for variations in workplace contexts and environment

Resource Implications	CNC controlled equipment, standard operating procedures, unprocessed materials.
Method of Assessment	Assessment methods must confirm consistency of performance over time and in a range of workplace relevant contexts. Assessment should be by direct observation of tasks and questioning on underpinning knowledge. Assessment should be conducted over time and may be in conjunction with assessment of other units of competency.
Context of Assessment	Assessment may occur on the job or in a workplace simulated facility with relevant process equipment, materials, work instructions and deadlines.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
CNC sizing machines	CNC sizing machines are to include CNC beam saws and may include double end profiling machines
Unit scope	Work involves computer programming skills, reading and interpreting drawings, stock control, setting cutting speeds, computer-aided machining operations, saw and tool maintenance
Material to be sized is to include:	• solid timber • manufactured board • laminate • solid synthetic materials and plastics
Unit context	• OH&S requirements include legislation, building codes, material safety management systems, hazardous substances and dangerous goods code and local safe operating procedures • Work is carried out in accordance with legislative obligations, environmental legislation, relevant health regulations, manual handling procedures and organisation insurance requirements • Work requires individuals to demonstrate some discretion, judgement and problem solving skills in the set up and operation of machines • Competency may be demonstrated in workplaces involved in the manufacture of solid timber furniture, domestic furniture, commercial furniture, kitchen and bathroom cabinets and/or furniture components
Tools	Tools are to include machine-specific tools and may include screwdrivers, hammers and spanners
Personal protective equipment	Personal protective equipment is to include that prescribed under legislation, regulations and

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RANGE STATEMENT	
	enterprise policies and practices
Information and procedures	• Workplace procedures relating to the use of tools and equipment • Work instructions, including job sheets, cutting lists, plans, drawings and designs • Workplace procedures relating to reporting and communication • Manufacturers' specifications and operational procedures

Unit Sector(s)

Unit sector	Furniture Making

Competency field

Competency field	

Co-requisite units

Co-requisite units		

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LMFFM3031B Set up, operate and maintain CNC machining and processing centres

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit covers the competency to set up, operate and maintain CNC machining and processing centres to produce furniture or components

Application of the Unit

Application of the unit	

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units	Nil	

Employability Skills Information

Employability skills	This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Work instructions are used to determine job requirements, including: design, quality, materials, equipment and quantities 1.2. Workplace health and safety requirements, including personal protection needs, are observed throughout the work 1.3. Material for machining is selected and inspected for appropriate quality 1.4. Procedures are determined for minimising waste material 1.5. Procedures are identified for maximising energy efficiency while completing the job
2. Set up for machining and processing	2.1. CNC program is set to job requirements 2.2. Safety equipment, including emergency stops, gauges, guards and controls are checked 2.3. Machining and processing settings and adjustments are made in accordance with job requirements and machining and processing and tool manufacturers' instructions 2.4. Machining and processing, cutting tools and jigs are checked for safe and effective operation 2.5. Trial runs are conducted to check machining and processing operation and quality of finished work 2.6. Final adjustments are made to CNC programs and equipment according to workplace procedures
3. Operate machining and processing centres	3.1. Machining and processing centres are operated and monitored to ensure product quality and output 3.2. Waste quantities are checked and minimised 3.3. Problems with the required work are identified and reported to appropriate persons 3.4. Items that do not meet quality requirements are repaired, recycled or discarded according to workplace procedures 3.5. Any authorised changes in working procedures are followed
4. Clean up work area and maintain equipment	4.1. Material that can be reused is collected and stored 4.2. Waste and scrap are removed following workplace procedures 4.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with

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ELEMENT	PERFORMANCE CRITERIA
	workplace procedures 4.4. Operator maintenance is completed in accordance with manufacturers' specifications and site procedures 4.5. Unserviceable equipment is tagged and faults identified in accordance with workplace 4.6. Equipment and tooling is maintained in accordance with workplace procedures

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- collect, organise and understand information related to CNC machining and processing centre operations, work orders, plans and safety procedures
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including the preparation and layout of the worksite and the obtaining of equipment and materials to avoid any back tracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to correctly complete measurements, compute input data and estimate material requirements
- use pre-checking and inspection techniques to anticipate CNC machining and processing centre problems, avoid reworking and avoid wastage
- use the workplace technology related to CNC machining and processing centre, including machining and processing, tools, equipment and measuring devices

Required knowledge

- types, characteristics, uses and limitations of CNC machining and processing centres
- CNC theory, practices and techniques
- characteristics of materials used and uses of products produced
- workflow processes
- procedures for reporting materials, product or equipment faults

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	

Critical Aspects of Evidence	• Locate, interpret and apply relevant information
	• Apply safe handling requirements for equipment, products and materials, including use of personal protective equipment
	• Identify materials used in the work process
	• Follow work instructions, operating procedures and inspection practices to:
	  • minimise the risk of injury to self or others
	  • prevent damage to goods, equipment or products
	  • maintain required production output and product quality
	• Identify, set up and operate CNC machining and processing centre equipment to complete detailed profiling, including:
	  • development and application of sub-program
	  • development and application of parametric program, and
	  • application of CAD/CAM functions
	• Conduct operator maintenance on the machining and processing centre equipment
	• Work effectively with others
	• Modify activities to cater for variations in workplace contexts and environment

Resource Implications	CNC controlled equipment, standard operating procedures, unprocessed materials.
Method of Assessment	Assessment methods must confirm consistency of performance over time and in a range of workplace relevant contexts. Assessment should be by direct observation of tasks and questioning on underpinning knowledge. Assessment should be conducted over time and may be in conjunction with assessment of other units of competency.
Context of Assessment	Assessment may occur on the job or in a workplace simulated facility with relevant process equipment,

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	materials, work instructions and deadlines.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
CNC machining and processing centres are to include three axis machining centre and may include:	• multi-tasking machining centres • flat-bed routers and mortiser
Material to be machined and processed is to include:	• solid timber and manufactured board
Unit scope	Work involves reading and interpreting drawings, selecting and installing tooling, setting jigs and fixtures, programming skills (sub-programs and parametrics), performance of CAM functions, downloading and storage of data to complete detailed profiling and other specified operations
Unit context	• OH&S requirements include legislation, building codes, material safety management systems, hazardous substances and dangerous goods code and local safe operating procedures • Work is carried out in accordance with legislative obligations, environmental legislation, relevant health regulations, manual handling procedures and organisation insurance requirements • Work requires individuals to demonstrate some discretion, judgement and problem solving skills in the set up and operation of machining and processing centres • Competency may be demonstrated in workplaces involved in the manufacture of solid timber furniture, domestic furniture, commercial furniture, kitchen and bathroom cabinets and/or furniture components
Tools and equipment are to include:	• stand-alone or integral computing systems and machine-specific tools

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Personal protective equipment	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices
Information and procedures	• Workplace procedures relating to the use of tools and equipment • Work instructions, including job sheets, cutting lists, plans, drawings and designs • Workplace procedures relating to reporting and communication • Manufacturers' specifications and operational procedures

Unit Sector(s)

Unit sector	Furniture Making

Competency field

Competency field	

Co-requisite units

Co-requisite units		

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LMFFT4010B Identify and calculate production costs

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit covers the competency to estimate materials, labour and time requirements and establish costs for the provision of products, including all overheads.

Application of the Unit

Application of the unit	

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units	Nil	

Employability Skills Information

Employability skills	This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Gather information	1.1. Details of the particular product and competition products are obtained 1.2. Details of the proposed production operation are obtained and analysed 1.3. Labour unit cost projections are obtained and agreed 1.4. Logistic support contracts, supply agreements or equivalent are obtained and analysed 1.5. Details of proposed warehousing and physical distribution systems and related cost factors are obtained 1.6. Information is converted to usable form and stored ready for retrieval and application
2. Estimate materials and labour	2.1. Types and quantities of materials required for production are estimated and recorded 2.2. Time requirements for production activities and other lead times are estimated 2.3. Labour requirements for direct production and handling operations are estimated and recorded
3. Determine/calculate overheads	3.1. Components contributing to overhead costs are identified 3.2. Overhead costs to be attributed to work in accordance with commercial and enterprise procedures are identified
4. Calculate costs	4.1. Total materials costs and labour costs are calculated in accordance with enterprise procedures 4.2. Total production cost is calculated, including overheads and mark-up percentages 4.3. Final cost to customer is calculated in conjunction with marketing/sales personnel
5. Document details and verify where necessary	5.1. Details of costs and charges are documented in accordance with enterprise practice 5.2. Costs, calculations or other details are verified by other enterprise personnel, as required 5.3. Details are documented for future reference in accordance with enterprise practice

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- research, collect, organise and understand information related to production costing including the relevant technical, commercial, industrial and accounting requirements
- communicate ideas and information to enable clarification of the production and related requirements and to present the outcomes in an appropriate manner
- plan and organise activities to avoid backtracking and re-working of solutions
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to correctly estimate and validate labour, materials and on-costs and calculate production costs
- create and apply systematic problem solving techniques to anticipate costing problems, avoid re-working and avoid wastage
- use the workplace technology related to costing, including calculators and measuring devices and computing/computer-aided systems

Required knowledge

- production systems documentation processes
- enterprise costing procedures
- mathematical formulae and processes relevant to costing
- components of labour costs
- enterprise/commercial approach to overhead costs
- enterprise/commercial approaches to warehousing and physical distribution costs
- enterprise information management processes, including storage requirements

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	

Critical aspects of evidence	• Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
	• For a significant mass production operation, determine the production and product costs using the following or equivalent steps:
	  • obtain all information relevant to the determination of costs
	  • interpret plans, specifications and instructions for production and materials to be used
	  • estimate quantities of materials required
	  • determine the types and amount of labour required to complete the work
	  • estimate time required to complete the work
	  • determine/calculate overheads
	  • document the process and outcomes
	• Work effectively with others

Resource implications	Access is required to real or appropriately simulated situations involving estimation and costing of production operations and products. Access is required to specifications and costs of relevant equipment and materials and information on labour costs and availability, on costs, safety costs, regulations, quality standards, and enterprise procedures. Access is required to all necessary facilities and associated equipment, including calculators, computers and relevant software.
Method of assessment	Assessment methods must confirm consistency or the potential for consistency of performance over time and in a range of workplace relevant contexts. Assessment should be by direct observation of performance and samples of work outcomes and questioning on underpinning knowledge. Assessment may be conducted over time and may be in conjunction with assessment of other units of

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	competency.
Context of assessment	Assessment may occur on the job or in a simulated workplace facility with a relevant scenario, simulated work instructions and deadlines.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Unit scope	• Work involves the estimating and costing of production and products in a significant mass production environment • Work may involve referral of matters to other enterprise personnel
Unit context	• OHS requirements include legislation, building codes, material safety management systems, hazardous substances and dangerous goods codes and safe operating procedures • Work is carried out in accordance with legislative obligations, environmental legislation, relevant health regulations, authorised handling procedures and organisation insurance requirements • Work requires individuals to demonstrate organisational and administrative ability, discretion, judgement and problem solving skills
Workplace environment	• Work undertaken in accordance with established procedures involving a range of products, equipment and installation sites • Interaction with customers and other personnel from the operator's workplace • Use of relevant tools, equipment and resources, including: • measuring equipment • product sales literature • product samples
Overhead costs	Overheads may be calculated for a specific product or be a constant component based on historical records and may include such costs as rental/lease costs, utilities, non-production resources, depreciation of plant and equipment, warehousing margins, physical distribution unit costs, insurance and other costs incurred by doing

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	business
Information and procedures	• Enterprise production plan and schedule • Enterprise financial management policy and procedures • Enterprise policy and procedures for cost and apportioning overheads • Labour employment costs (awards, EBA, contracts) • Material/supply costs (contracts, standing agreements, market rates, warehousing margins) • Physical distribution contracts or arrangements • Australian, international and enterprise quality standards and procedures

Unit Sector(s)

Unit sector	Furnishing Technology

Competency field

Competency field	

Co-requisite units

Co-requisite units		

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LMFGG2008B Glaze/reglaze residential windows and doors

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit addresses the knowledge and skills required to fit glass to residential windows and doors.

Application of the Unit

Application of the unit	

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units	Nil	

Employability Skills Information

Employability skills	This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify work requirements	1.1. Work requirements in the form of type of glass and the method of fixing are identified from work instructions 1.2. Workplace health and safety requirements for glazing/reglazing of windows and doors, including personal protection needs, are observed throughout the work 1.3. The process for fitting glass to window and door frames is identified
2. Prepare for work	2.1. Work sequence is planned in a logical order to suit the job 2.2. Tools, equipment and materials (less glass and frames) are selected and checked prior to use to ensure that they are appropriate for the work, serviceable and in a safe condition 2.3. Type of glass to be fitted and frames are selected to match: 2.3.1. customer order 2.3.2. existing glass type 2.3.3. requirements for security, noise or light control 2.3.4. Australian Standards 2.4. Glass is checked for type, size and imperfections 2.5. Glass fixing method is selected according to: 2.5.1. specification 2.5.2. type of glass and frame 2.5.3. security requirements 2.5.4. sealing methods 2.5.5. Australian Standards 2.6. Frame condition is assessed to ensure suitability for glazing in accordance with customer order and Australian Standards. Defective frames are reported for repair or replacement in accordance with workplace procedures 2.7. Fixing and sealing materials are prepared by mixing or cutting to length as appropriate
3. Identify site conditions and restraints	3.1. On-site difficulties are recognised and action taken to resolve in accordance with regulations and workplace requirements

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ELEMENT	PERFORMANCE CRITERIA
	3.2. Covering material is applied where necessary to protect existing fixtures and fittings 3.3. Special characteristics of the window or door which may affect the finished job are identified and corrective action taken
4. Perform glazing	4.1. Frame is prepared to receive glass by: 4.1.1. checking size against specification 4.1.2. removing remains of glass and any sealants 4.1.3. cleaning 4.1.4. surface preparation (if required) 4.2. Glass is fixed to the frame using the selected method and in accordance with recognised industry procedures and Australian Standards 4.3. Solvents and sealants are used in accordance with manufacturer recommendations and Australian Standards 4.4. Excess sealing material is removed 4.5. Glass and frame are cleaned after fixing
5. Complete work	5.1. Completed installation is checked to ensure compliance with customer requirements and specifications 5.2. Tools, equipment and materials are cleaned and stored following workplace procedures 5.3. Work area is cleaned and left in a safe condition and rubbish disposed of as appropriate 5.4. Waste and scrap materials are removed for disposal or recycling as required 5.5. Workplace documentation is completed in accordance with workplace requirements

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- collect, organise and understand information related to work orders, basic plans, and safety procedures
- communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with work supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities including the preparation and layout of the work area and the obtaining of equipment and materials to avoid any back tracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to correctly complete measurements, calculate work requirements, optimise glass sizes for economical cutting and assemble required materials
- use pre-checking and inspection techniques to plan work, avoiding re-working and wastage
- use the limited workplace technology related to the glazing of simple window and door frames

Required knowledge

- the qualities and characteristics of glass, including the hazards and handling requirements
- the techniques, methods, materials and process of glazing simple/complex window and door frames
- workplace safety system requirements related to the glazing simple/complex window and door frames
- relevant Australian Standards
- workflow in relation to fitting glass
- characteristics, purpose and operation of tools and equipment used in glazing simple/complex window and door frames
- identification of equipment, processes and procedures

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	

Critical aspects of evidence	• Interpret work order/job instruction and locate and apply relevant information to glaze/reglaze simple/complex windows and doors
	• Apply safe handling requirements for equipment, products and materials, including use of personal protective equipment
	• Follow work instructions, operating procedures and inspection practices to:
	  • minimise the risk of injury to self and others
	  • prevent damage to goods, equipment and products
	  • maintain required production output and product quality
	• Glaze the following:
	  • timber putty faced and beaded window sashes, including fixed, sliding, double hung, casement and awning sashes
	  • metal channel and beaded window sashes, including fixed, sliding, double hung, casement and awning sashes
	  • timber putty faced and beaded doors, including fixed, sliding, hinged, pivot and bi-fold doors
	  • metal channel and beaded doors, including fixed, sliding, hinged, pivot and bi-fold doors
	• Include the following for each:
	  • select glass thickness and type in accordance with AS1288
	  • calculate glazing clearance and cutting size
	  • cut glass to AS4667 Quality requirements for cut to size and processed glass
	  • select glazing tools, equipment, glazing sealants, vinyls and tapes
	  • prepare working area
	  • prepare glazing rebates and channels prior to installation
	  • clean glass, tools, equipment and work area
	  • calculate the cost of glass, glazing materials and

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	labour
	• Re-glaze timber and metal windows and doors, including:
	  • prepare work area and drop sheets
	  • select reglazing tools and equipment
	  • hack out/remove beads and glass safely from timber windows and doors
	  • remove and disassemble metal window sashes and doors and remove glass safely
	  • select glass thickness and type in accordance with AS1288
	  • calculate glazing clearance and cutting size
	  • cut glass to industry standards AS4667
	  • select glazing tools, equipment, glazing sealants, vinyls and tapes
	  • glaze timber and metal windows and doors
	  • install sash cords, unique and spring balances on timber and metal double hung windows
	  • clean glass, tools, equipment and work area
	• Work effectively with others
	• Modify activities to cater for variations in workplace contexts and environment

Resource implications	Frames, glass, fixing material, sealants, workplace operating procedures and work orders, personal protective equipment and an appropriate work area/site.
Method of assessment	Assessment methods must confirm consistency of performance over time and in a range of workplace relevant contexts. Assessment should be by direct observation of tasks and questioning on underpinning knowledge. Assessment may be in conjunction with assessment of other relevant units of competency.
Context of assessment	Assessment may occur on the job or in a workplace simulated facility with relevant glazing equipment, materials, work instructions and deadlines.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Unit context	• Work is carried out in accordance with statutory requirements, environment legislation, manual handling procedures and relevant regulations and organisation insurance requirements • OHS requirements may include legislation, standards, building codes, material safety management systems and local safe operating procedures • Work requires individuals to demonstrate discretion, judgement and problem solving skills in the handling and installation of glass products • Work may be performed in workplaces which are involved in on-site and off-site fabrication, installation and/or replacement of glass to commercial or residential windows, doors and other openings or to other frames

Glaze/re-glaze	• Involves the installation of glass to metal and/or timber doors, windows and other frames and reglazing of existing windows and doors
	• Residential glazing/re-glazing is confined to simple doors and windows and may include:
	  • residential windows, such as fixed, sliding, casement, awning and double hung and louvres
	  • residential doors, such as sliding, hinged, pivot and bi-fold
	• Glazing or reglazing for non-residential situations is addressed in commercial and architectural/engineering AQF III units

Types of glass may include but are not limited to:	• annealed glass • toughened glass • laminated glass • wired glass

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RANGE STATEMENT	
	• tinted and heat reflective glass • coated glass and insulated glass units.
Tools and equipment are to include:	• tungsten wheel glass cutters • speed cutters • cutting lubricants • running pliers • straight edges and squares • tape measures • glass handling and lifting equipment • hack-out knives • chisels • putty knives • sprig/diamond guns • vinyl cutters and rollers • pry bars • sealant guns • blade and phillips head screwdrivers • pop rivet guns • electric and pneumatic drills • rubber mallets • claw hammers • nail punches and PPE equipment
Materials are to include but are not limited to:	• all forms of flat glass and acrylic glazing products • plastic • aluminium • steel • solid timber • gaskets • sealants • adhesives • glazing tapes and setting blocks
Methods of glazing may include:	• channel glazing • beaded glazing and double glazing
Personal protective equipment	Personal protective equipment is to include that prescribed under legislation, regulation and Australian Standard policies and practices. It may include: • gloves

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RANGE STATEMENT	
	• safety glasses • gauntlets • safety footwear • hard hats • aprons and overalls
Information and procedures	• Workplace procedures relating to the glazing of simple windows and doorframes • Australian Standards AS1288, 2208, 4667, 2047, 4666 • Equipment and material manufacturers' specifications and operational procedures • On-site procedures and regulations relating to the handling and movement of glass • Work instructions, including job sheets, plans, drawings and designs • Safety standards include personal protective equipment, OHS regulations and enterprise requirements

Unit Sector(s)

Unit sector	Glass and Glazing

Competency field

Competency field	

Co-requisite units

Co-requisite units		

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MEM05010C Apply fabrication, forming and shaping techniques

Modification History

Not Applicable

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Unit Descriptor

Unit descriptor	This unit of competency covers applying fabrication, forming and shaping of a wide variety of shapes and products undertaken by an Engineering Tradesperson - Fabrication using a variety of forming and shaping techniques. The fabrication, forming and shaping is done to specifications interpreted from technical drawings and job specifications using a variety of tools and equipment.

Application of the Unit

Application of the unit	This unit of competency applies to fabrication, forming and shaping of plate, sheet and tubular ferrous and non-ferrous metal to specified measurements, tolerances and shapes. Skills covered by this unit are generally applied in occupational and work situations associated with steel fabrication, boilermaking or sheet metal work. This unit has been developed for Engineering Tradesperson - Fabrication apprenticeship training and the recognition of trade level skills in fabrication, forming and shaping. Predetermined standards of quality and safety are observed and work is carried out following standard operating procedures. This unit includes the ability to produce a wide range of shapes and products such as pipework, chamfers, cylinders, cones, angles, hoppers, ductwork, 'square to round', 'transitions', 'lobster backs' and all forms of tubular shapes, including hand rails, reticulation pipework and mufflers. Materials may include ferrous and non-ferrous and non-metallic materials. A variety of tools and equipment may be used including presses, shapers, benders, rollers and drop hammers. If heating or thermal cutting is required, MEM05007C Perform manual heating and thermal cutting should be accessed. Where marking off/out skills are required, then MEM12007D Mark off/out structural fabrications and shapes should be selected. Where welding is required, relevant welding units should be selected.

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	This unit does not cover repetitive fabrication, bending and shaping of metal and non-metallic materials by production workers, trades assistants etc. such as where the bending or shaping equipment has been pre-set and the material to be fabricated, formed or shaped has been pre-marked up or pre-cut to size. This unit is also not intended to apply in situations where products or shapes are merely bent using hand tools or equipment. **Band**: **A** **Unit Weight**: **8**

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM05037C	Perform geometric development
	MEM09002B	Interpret technical drawing
	MEM12023A	Perform engineering measurements
	MEM12024A	Perform computations
	MEM18001C	Use hand tools

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Select and set up forming/shaping equipment for a specific operation	1.1. Most appropriate tools and equipment are selected 1.2. Equipment is correctly set up and adjusted for operation to standard operating procedures 1.3. Allowances for shrinkage, thickness and inside/outside measurements are correctly made
2. Operate forming/shaping equipment	2.1. Machine is safely started up and shut down to standard operating procedures 2.2. Material and safety guards are correctly positioned. 2.3. Equipment is correctly operated and adjusted
3. Form and shape material	3.1. Material is levelled, straightened, rolled, pressed or bent to specifications/drawings using fabrication techniques 3.2. Correct hot or cold forming procedures are followed 3.3. Final form/shape is checked for compliance to specification and adjusted as necessary to standard operating procedures

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills include:

- selecting tools and equipment
- setting up and adjusting equipment
- calculating allowances
- taking measurements
- starting up and shutting down the machine
- positioning material
- positioning safety guards
- obtaining drawings and/or specifications
- selecting the most appropriate forming/shaping process to achieve the required size and specification
- forming/shaping material to size and specification

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REQUIRED SKILLS AND KNOWLEDGE
• checking the final form/shape of the object for conformance with specifications • reworking the object to ensure conformance with specifications • reading, interpreting and following information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents • planning and sequencing operations • checking task-related information
Required knowledge
Required knowledge includes: • variety of hot and cold forming/shaping processes • machines, tools and/or equipment required to perform forming/shaping processes • reasons for selecting chosen tools, equipment and processes • adjustments that can be made to the equipment and the effect of adjustments on the object being formed/shaped • allowances when forming/shaping materials • sources of data relating to allowances • startup and shutdown procedures • the material positioning/feeding requirements • the location and function of all safety guards • procedures for the forming/shaping process • defects in formed/shaped materials • defects that can be rectified by further work/adjustment • hazards and control measures associated with undertaking fabrication, forming and shaping, including housekeeping • safe work practices and procedures

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	A person who demonstrates competency in this unit must be able to apply fabrication, forming and shaping techniques to meet specifications. Competency in this unit cannot be claimed until all prerequisites have been satisfied.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently apply the skills covered in this unit of competency in new and different situations and contexts. Critical aspects of assessment and evidence include: • examining drawings and specifications to determine correct equipment to be used and sequence of fabrication, forming and shaping processes • correctly identifying any specified tolerances • correctly calculating allowances for shrinkage, thickness and inside/outside measurements • setting up and safely operating equipment to ensure forming and shaping outcome is to specifications • ensuring equipment is shut down and made safe • carrying out hot and cold forming processes safely and to specifications including levelling, straightening, rolling, pressing or bending.
Context of and specific resources for assessment	This unit has been developed to support training in and recognition of trade level competency in fabrication, forming and shaping as applied to a sheet metal or metal fabrication environment. Assessment should emphasise a workplace context and procedures found in the candidate's workplace. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.
Method of assessment	Typically, persons engaged in Engineering Tradesperson - Fabrication work are required to exercise fabrication, forming and shaping skills and techniques across a range of jobs and specifications.

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EVIDENCE GUIDE	
	A single assessment event is not appropriate. On the job assessment should be included as part of the assessment process wherever possible. Where assessment occurs off the job, judgement must consider evidence of the candidate's performance in a productive work environment that includes a sufficient range of appropriate tasks and materials to cover the scope of application for this unit. Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.
Guidance information for assessment	This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with applying fabrication, forming and shaping techniques or other units requiring the exercise of the skills and knowledge covered by this unit. Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.

Range Statement

RANGE STATEMENT
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and

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RANGE STATEMENT	
regional contexts) may also be included.	
Tools and equipment	Tools and equipment may include: • presses • shapers • benders • rollers • drop hammers
Material	Material may include ferrous and non-ferrous and non-metallic substances
Fabrication techniques	Fabrication techniques may include measurements and calculations associated with allowances for shrinkage, thickness and inside/outside measurements
Final form/shape	Final form/shape may include: • pipework • chamfers • cylinders • cones • angles • hoppers • ductwork • 'square to round' • 'transitions' • 'lobster backs' • all forms of tubular shapes, including hand rails, reticulation pipework and mufflers

Unit Sector(s)

Unit sector	

Co-requisite units

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Co-requisite units		

Competency field

Competency field	Fabrication

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MEM05049B Perform routine gas tungsten arc welding

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers preparing the materials and carrying out routine gas tungsten arc welding (GTAW).

Application of the Unit

Application of the unit	This unit applies in a maintenance or manufacturing environment where the weld quality is not required to meet an Australian Standard. Fillet and butt welds would typically be performed on low carbon/mild steels and aluminium. Where welding is required to meet Australian Standard 1554 General Purpose or equivalent codes, occupational health and safety regulations and/or licensing requirements, Unit MEM05019D (Weld using gas tungsten arc welding process) should be selected. **Band**: **A** **Unit Weight**: **2**

Licensing/Regulatory Information

Refer to Application of the Unit

Pre-Requisites

Prerequisite units		

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Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify weld requirements	1.1. Weld requirements are identified from job instructions. 1.2. The locations of welds are identified in accordance with standard operating procedures and job specifications.
2. Prepare materials for welding	2.1. Materials are cleaned and prepared ready for welding.
3. Prepare equipment for welding	3.1. Welding equipment is set up correctly. 3.2. Settings and consumables are selected to suit application.
4. Perform routine welding using GTAW	4.1. Safe welding practices are applied. 4.2. Materials are welded to job requirements. 4.3. Welds are cleaned to standard operating procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Look for evidence that confirms skills in:

- preparing materials
- setting up welding equipment
- welding with GTAW
- reading and interpreting routine information on written job instructions, specifications and standard operating procedures
- using measurement skills for joint preparation and routine GTAW

Required knowledge

Look for evidence that confirms knowledge of:

- preparatory requirements
- properties and characteristics of materials and consumables
- equipment and equipment settings
- fuel gas properties and applications
- post welding treatments

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REQUIRED SKILLS AND KNOWLEDGE
• weld characteristics • safe welding practices • use and application of personal protective equipment for routine GTAW

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	A person who demonstrates competency in this unit must be able to perform routine gas tungsten arc welding (GTAW).
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.
Context of and specific resources for assessment	This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate. This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with carrying out routine gas tungsten arc welding or other units requiring the exercise of the skills and knowledge covered by this unit.
Method of assessment	Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.
Guidance information for	

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EVIDENCE GUIDE	
assessment	

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Materials	Mild and low carbon steel
Prepared	Preheating, setting up jigs, fixtures, clamps, joint preparation
Equipment	Hoses, welding leads and gas shrouds, electrodes, gas regulator, liners, contact tips
Consumables	Tungsten electrodes, filler wire, shielding gas
Cleaned	Slag, spatter

Unit Sector(s)

Unit sector	

Co-requisite units

Co-requisite units		

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Competency field

Competency field	Fabrication

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MEM05050B Perform routine gas metal arc welding

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers preparing materials and routine gas metal arc welding (GMAW).

Application of the Unit

Application of the unit	This unit applies in a maintenance or manufacturing environment where the weld quality is not required to meet an Australian Standard or equivalent. Fillet and butt welds would typically be performed on low carbon/mild steels. Where welding is required to meet Australian Standard 1554 General Purpose or equivalent codes, occupational health and safety regulations and/or licensing requirements, Unit MEM05017D (Weld using gas metal arc welding process) should be selected. **Band**: **A** **Unit Weight**: **2**

Licensing/Regulatory Information

Refer to Application of the Unit

Pre-Requisites

Prerequisite units		

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Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify weld requirements	1.1. Weld requirements are identified from job instructions. 1.2. Locations of welds are identified in according to standard operating procedures and job specifications.
2. Prepare materials for welding	2.1. Materials are cleaned and prepared ready for welding.
3. Prepare equipment for welding	3.1. Welding equipment is set up correctly. 3.2. Settings and consumables are selected to suit application.
4. Perform routine welding using GMAW	4.1. Safe welding practices are applied. 4.2. Materials are welded to job requirements. 4.3. Welds are cleaned to standard operating procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Look for evidence that confirms skills in:

- preparing materials
- setting up welding equipment
- welding with GMAW
- reading and interpreting routine information on written job instructions, specifications and standard operating procedures
- following oral instruction
- using measurement skills relating to joint preparation and routine GMAW

Required knowledge

Look for evidence that confirms knowledge of:

- different current and voltage settings, gas flow rates wire diameters, wire feed speed and other variables to suit typical situations.
- material and equipment preparation
- properties and characteristics of materials and consumables
- equipment and equipment settings

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REQUIRED SKILLS AND KNOWLEDGE
• fuel gas properties and applications • post-welding treatments • weld characteristics • safe welding practices • use and application of personal protective equipment for routine GMAW

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	A person who demonstrates competency in this unit must be able to perform routine gas metal arc welding (GMAW).
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.
Context of and specific resources for assessment	This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate. This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with preparing the materials and carrying out routine gas metal arc welding or other units requiring the exercise of the skills and knowledge covered by this unit.
Method of assessment	Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.
Guidance information for	

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EVIDENCE GUIDE	
assessment	

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Materials	Mild and low carbon steel
Prepared	Preheating, setting up jigs, fixtures, clamps, joint preparation
Equipment	Hoses, welding leads, gas shrouds, gas regulators, liners, contact tips
Consumables	Filler wire, shielding gas
Cleaned	Slag and spatter

Unit Sector(s)

Unit sector	

Co-requisite units

Co-requisite units		

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Competency field

Competency field	Fabrication

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MEM10009B Install refrigeration and air conditioning plant and equipment

Modification History

Not Applicable

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Unit Descriptor

Unit descriptor	This unit covers installing refrigeration/air conditioning systems in commercial, industrial, marine and transport applications.

Application of the Unit

Application of the unit	This unit applies to refrigeration/air conditioning systems in commercial, industrial, marine and transport applications - refer to field definitions. All work is to be undertaken in accordance with all relevant Commonwealth, State or Territory legislation and regulatory requirements. Modifications and alterations are of a minor nature and do not require specification changes or technical recording, for example, the fitting of spacers, relocation of brackets, alignment of holes, etc. Work is undertaken using new or existing internal or external locations and sites. Footings, foundations, beds and frameworks are completed prior to installation. Work is undertaken autonomously or in a team environment using predetermined standards of safety, quality and workshop procedures. This unit should not be selected with Unit MEM10006B (Install machine/plant). Where extensive fitting and alignment is required, then Unit MEM18006C (Repair and fit engineering components) and Unit MEM18009B (Perform levelling and alignment of machines and engineering components) should also be selected. Where modifications involve electrical disconnection and reconnection, then Unit MEM18049C (Disconnect/reconnect fixed wired equipment up to 1000 volts a.c./1500 volts d.c.) should also be selected. **Band**: **A** **Unit Weight**: **4**

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Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM05006B	Perform brazing and/or silver soldering
	MEM09002B	Interpret technical drawing
	MEM10010B	Install pipework and pipework assemblies
	MEM12023A	Perform engineering measurements
	MEM18001C	Use hand tools
	MEM18002B	Use power tools/hand held operations
	MEM18055B	Dismantle, replace and assemble engineering components
	MEM18086B	Test, recover, evacuate and charge refrigeration systems

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Inspect and prepare installation site	1.1. Site is checked for correct location, dimension and levels, etc. using appropriate measuring equipment and standard refrigeration/air conditioning practices. 1.2. Non-compliance with specification is reported to appropriate authority. 1.3. Alteration/correction is undertaken with approval of appropriate authority. 1.4. All surfaces, materials and components are prepared for use.
2. Install refrigeration/air conditioning plant and equipment	2.1. All work is carried out safely and in accordance with site procedures and to relevant standards. 2.2. Refrigeration/air conditioning plant and equipment/components are organised for correct sequential installation. 2.3. Refrigeration/air conditioning plant and equipment/components are installed in conformance with manufacturers' and site specifications. 2.4. Routine modifications/alterations of the refrigeration/air conditioning plant and equipment are undertaken to standard operating procedures where required. 2.5. Refrigeration/air conditioning plant and equipment are levelled, aligned, coupled and connected in accordance with specifications. 2.6. The refrigeration system is charged with refrigerant and lubricant in accordance with standard operating procedures. 2.7. The site is cleaned and cleared of all debris and left in a safe state.
3. Start up refrigeration/air conditioning plant and equipment and check operation	3.1. Start-up procedure is developed for the refrigeration/air conditioning plant and equipment. 3.2. The refrigeration/air conditioning plant and equipment is operated and assessed for conformance to specification. 3.3. Non-conformances and system faults are identified, and appropriate action/adjustments are taken to specification. 3.4. All reports and documentation are completed correctly to required specifications.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Look for evidence that confirms skills in:

- reading, interpreting and following information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
- planning and sequencing operations
- checking task-related information
- checking the site for correct location, dimensions and levels
- detecting and reporting non-conformance to specifications
- preparing surfaces for installation
- checking for conformance to specifications
- preparing plant for start-up
- adjusting refrigeration plant and equipment
- using appropriate tools, techniques and equipment

Required knowledge

Look for evidence that confirms knowledge of:

- procedures for non-compliances
- procedures for checking the refrigeration/air conditioning plant and associated equipment
- procedures for making alterations, corrections or adjustments to the refrigeration/air conditioning plant and associated equipment
- correct sequential installation of all components
- methods of fixing/fastening and locating/holding the components
- procedures for checking refrigeration systems for leaks
- procedures for checking refrigeration/air conditioning plant and associated equipment prior to start-up
- procedures for adjusting the refrigeration/air conditioning plant and associated equipment to specification
- codes and regulations relevant to the refrigeration/air conditioning industry including environmental and ozone and greenhouse substance legislation
- hazards and control measures associated with installing refrigeration and/or air conditioning plant and associated equipment, including housekeeping
- safe work practices and procedures

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	A person who demonstrates competency in this unit must be able to install refrigeration and air conditioning plant and equipment. Competency in this unit cannot be claimed until all prerequisites have been satisfied.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.
Context of and specific resources for assessment	This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate. This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with installing refrigeration and air conditioning plant and equipment or other units requiring the exercise of the skills and knowledge covered by this unit.
Method of assessment	Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

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EVIDENCE GUIDE	
Guidance information for assessment	

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Measuring equipment	Lasers, dumpy levels etc.
Relevant standards	• Australian standards • Building codes • Air conditioning/refrigeration standards • Local authority standards • Environmental standards • Greenhouse emission regulations
Refrigeration/air conditioning plant and equipment/components	Compressors, evaporators, condensers, valves, controllers, fans, solenoids, sensors, thermostats, switches, recorders, etc.
Appropriate action	In accordance with urgency requirements to address equipment failure and/or personnel danger

Unit Sector(s)

Unit sector	

Co-requisite units

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Co-requisite units		

Competency field

Competency field	Installation and commissioning

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MEM10010B Install pipework and pipework assemblies

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers planning, preparing and installing pipework and assemblies.

Application of the Unit

Application of the unit	This unit applies to installation of ferrous and non-ferrous pipes and fittings. Where pipework is to be cut by mechanical or thermal methods, or where welding processes are used, the appropriate unit(s) should be selected. Pipework and installation is performed to established practices and standards. Where the pipework is to be formed and shaped using mechanical and/or thermal techniques, Unit MEM05010C (Undertake fabrication, forming, bending and shaping), should be selected. Where pipework and assemblies are to be part of a system/process covered by legislative/regulatory requirements, units relating to the appropriate welding certificates for the pipe material and application must also be selected. **Band**: **A** **Unit Weight**: **4**

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units		
Path 1	MEM09002B	Interpret technical drawing
	MEM12023A	Perform engineering measurements
	MEM18001C	Use hand tools
	MEM18002B	Use power tools/hand held operations

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan the installation of pipework and pipework assemblies	1.1. Quantity and type of pipework and pipework assemblies are selected according to specifications. 1.2. The appropriate sequence for the installation of pipework and pipework assemblies is determined according to the installation type and specifications and other applicable factors. 1.3. The work area is prepared for installation of pipework and pipework assemblies.
2. Prepare pipework and pipework assemblies for assembly	2.1. Pipework is cleaned to standard operating procedures. 2.2. Pipework and assemblies are purged to standard operating procedures. 2.3. Pipework and assemblies are capped/sealed.
3. Install pipework and assemblies	3.1. Enclosures/hangers/support systems are installed without damage or distortion to the surrounding environment or other services. 3.2. Pipework and assemblies are installed without damage or distortion to pipework, assemblies or surrounding environment or other services. 3.3. Pipework is leak tested to standard operating procedures. 3.4. All ancillary devices and materials are installed to specification according to standard operating procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
Look for evidence that confirms skills in: • interpreting and following information on specifications, standard operating procedures and other applicable reference documents • planning and sequencing installation • preparing the site • preparing joining surfaces

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REQUIRED SKILLS AND KNOWLEDGE
• purging pipework and assembly • capping and sealing pipework and assembly • installing enclosure/hanging /supporting assemblies • assembling and installing pipework and ancillaries • testing installed pipework and rectifying leaks
Required knowledge
Look for evidence that confirms knowledge of: • installation techniques • site and safety requirements • cleaning procedures and the applications and precautions for using solvents/cleaning material • purging techniques, applications and precautions • capping/sealing pipework and assembly methods • identification of location/layout of pipework and assemblies and application and characteristics of enclosure/hanging/supporting systems • pipework, ancillary installation and joining procedures • leak testing applications and uses • regulations and legislative requirements • hazards and control measures • use and application of personal protective equipment • safe work practices and procedures

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	A person who demonstrates competency in this unit must be able to install pipework and pipework assemblies in accordance with standard operating procedures. Competency in this unit cannot be claimed until all prerequisites have been satisfied.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.
Context of and specific resources for assessment	This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate. This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with installing pipework and pipework assemblies or other units requiring the exercise of the skills and knowledge covered by this unit.
Method of assessment	Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

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EVIDENCE GUIDE	
Guidance information for assessment	

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Pipework and pipework assemblies	• Ferrous, non-ferrous, plastic, etc. • Variety of sizes and or wall thickness • Variety of joining systems such as collars, unions, flanges, etc.
Enclosures	Metal and PVC
Hangers and support systems	Pipe/tube bundle support, ties, unistrut, trays, ladder racks, ducts etc.
Leak test	Soapy water, water immersion, compressed air
Ancillary devices and materials	Insulation materials, valve control systems, etc.
Legislation and regulations	Building regulations, gas/fluid pipeline regulations

Unit Sector(s)

Unit sector	

Co-requisite units

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Co-requisite units		

Competency field

Competency field	Installation and commissioning

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MEM18086B Test, recover, evacuate and charge refrigeration systems

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers testing, recovering, evacuating and charging refrigeration systems to achieve performance specification.

Application of the Unit

Application of the unit	This unit applies to refrigeration systems associated with refrigeration and air conditioning, including commercial, industrial, domestic, marine and transport applications. The application of this competency must cover a variety of refrigeration equipment and systems. Demonstration of competency must be in accordance with Australian Standards, including AS - HB40 Refrigeration and Air Conditioning codes of practice, and relevant ozone and greenhouse substance legislation. **Band**: **A** **Unit Weight**: **4**

Licensing/Regulatory Information

Not Applicable

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Pre-Requisites

Prerequisite units		
Path 1	MEM09002B	Interpret technical drawing
	MEM12023A	Perform engineering measurements
	MEM18001C	Use hand tools
	MEM18002B	Use power tools/hand held operations
	MEM18055B	Dismantle, replace and assemble engineering components

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Assess refrigeration system operation	1.1. Refrigeration system operating principles and terminology are applied to assessment activities. 1.2. All *relevant information* is obtained and correctly interpreted prior to the commencement of work on the refrigeration system. 1.3. Refrigeration system checks are undertaken safely in accordance with standard operating procedures, relevant codes and regulations. 1.4. Appropriate operating procedures are developed as required. 1.5. Pressures and temperatures are correctly determined and recorded. 1.6. Faults are correctly isolated to component level and *appropriate corrective action* is determined. 1.7. The refrigeration system is checked for leaks. 1.8. The refrigeration system is checked for *contamination*.
2. Recover refrigerant and evacuate system	2.1. The *refrigerant* in the system is recovered in accordance with standard operating procedures, codes and regulations. 2.2. The refrigerant recovered from the refrigeration system is contained in accordance with the *relevant codes and regulations*. 2.3. The refrigeration system is evacuated in accordance with standard operating procedures, codes and regulations.
3. Charge the refrigeration system	3.1. The refrigeration system is charged with the correct refrigerant in accordance with standard operating procedures. 3.2. The appropriate lubricating oil is added to the refrigeration system in accordance with standard operating procedures. 3.3. The refrigeration system is checked for leaks.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Look for evidence that confirms skills in:

- planning and sequencing operations
- developing operating procedures for equipment as required
- selecting correct refrigerant for a given system
- obtaining and interpreting drawings, instructions, specifications, procedures, codes and regulations
- testing and checking refrigeration components and systems including electrical safety checks and tests
- checking for conformance to specifications
- undertaking numerical operations within the scope of this unit
- determining pressures and temperatures
- documenting test results and procedures undertaken
- using equipment and test techniques
- identifying faulty components and system contamination
- applying safety procedures, standard operating procedures and legislative requirements to all work undertaken
- selecting appropriate materials, equipment and solutions for specific refrigeration systems

Required knowledge

Look for evidence that confirms knowledge of:

- operating principles of refrigeration systems
- characteristics, properties and operating specifications of each type of refrigerant
- safety precautions and work practices to be undertaken when handling or working with refrigerants
- methods of identifying stored refrigerants
- methods of identifying the type of refrigerant used in refrigeration systems
- relevant codes and regulations applying to refrigeration systems
- procedures and safety precautions for testing/checking refrigeration systems
- corrective actions for system and component faults including appropriate basic electrical safety checks
- types of leak detection equipment/techniques and their applications
- causes of contamination in refrigeration systems and their effect on refrigeration system performance
- procedures, tools and equipment to be used to clean up contaminated systems
- care and use of vacuum pumps
- tools, techniques and equipment required to carry out recovery procedures

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REQUIRED SKILLS AND KNOWLEDGE
• procedures for storing/disposing of recovered refrigerant • consequences of releasing quantities of refrigerant into the atmosphere • procedures for charging refrigeration systems • correct refrigerant for a range of given applications • tools, techniques and equipment required to charge a refrigeration system with refrigerant • precautions to be taken when charging by various methods, refrigeration systems with refrigerant • procedures for checking level and adding lubricating oil • properties and uses of refrigeration oil • hazards and control measures associated with handling refrigerants, including housekeeping • safe work practices and procedures

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	A person who demonstrates competency in this unit must be able to test, recover, evacuate and charge refrigeration systems. Competency in this unit cannot be claimed until all prerequisites have been satisfied.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.
Context of and specific resources for assessment	This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate. This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with the assessment, evacuation and charging of refrigeration systems, or other units requiring the exercise of the skills and knowledge covered by this unit.
Method of assessment	Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

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EVIDENCE GUIDE	
Guidance information for assessment	

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant information	Manufacturers' technical data, pressure temperature charts, operating manuals
Appropriate operating procedures	In the case where specific equipment does not have standard operating procedures
Appropriate corrective action	Isolation and tagging of faulty components, repair and/or replacement
Contamination	Moisture, non-condensables, solids, acids etc.
Refrigerant	All refrigerants including CFCs, HCFCs, HFCs, natural refrigerants, ammonia, etc.
Relevant codes and regulations	Australian Standards Refrigeration and Air Conditioning codes of practice, relevant ozone and greenhouse substance legislation

Unit Sector(s)

Unit sector	

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Co-requisite units

Co-requisite units		

Competency field

Competency field	Maintenance and diagnostics

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RIICCM210A Install trench support

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation of trench support in the civil construction industry. It includes planning and preparing, installing trench shoring, removing trench shoring, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain and confirm ***safety requirements*** from the site safety plan and organisational policies and procedures, and apply to the allotted task 1.3. Identify, obtain and implement ***traffic control signage*** requirements from the project traffic management plan 1.4. Select plant, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Install trench shoring	2.1. Communicate with plant operator to ensure the ***excavation*** of ***trenches*** complies with site plan, line and depth 2.2. Determine and prepare ***shoring method*** 2.3. Set out positioning of shoring 2.4. Position or ***erect shoring*** within the trench 2.5. Secure shoring in position and check to ensure structural conformity with regulations 2.6. Clean out excavation out by hand to job requirements 2.7. Provide ladders for access and egress to site safety plan requirements
3. Remove trench shoring	3.1. Release jacking mechanisms and remove ladders 3.2. Check shoring and prepare it for lifting from the trench 3.3. Remove shoring from trench and store it on site
4. Clean up	4.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 4.2. Clean, check, maintain and store tools and

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	equipment

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install trench shoring:

- apply legislative, organisation and site requirements and procedures for installing trench shoring
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install trench support:

- site and equipment safety requirements
- excavation techniques
- shoring methods and systems
- working in confined spaces
- construction techniques
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installing trench support • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of trench support installation • working with others to undertake and complete the installation of trench support in a way that meets all of the required outcomes • consistent timely completion of trench support installation that safely, effectively and efficiently meets the required outcomes • installation of trench support on two projects in trenches deeper than 1.5 metres requiring the trench support to be installed, moved along or within the trench and removed from the trench
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example,

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	language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the trench support installation

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan including: protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with high voltage power lines, uneven/unstable terrain, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, dangerous materials, recently filled trenches, other machines, personnel, traffic control, working at heights, working in proximity to others, worksite visitors and the public • safe parking practices including ensuring access ways are clear, equipment/machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement • recognising hazards and risks including uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment

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	operation including emergency shutdown and stopping, extinguishing equipment fires, organisational First Aid requirements and evacuation
Traffic control signage may include:	• site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Tools and equipment may include:	• shoring systems • levelling equipment • hand and power tools • measuring equipment • shovels • picks • scaffolding • elevated work platforms • slings • chains
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust • clean-up management
Excavations may include:	• trenches • wells • pits
Trench may include:	• trenches of at least 1.5 metres in depth • trenches less than 1.5 metres deep
Shoring method may include:	• fixed and/or adjustable trench boxes • drag boxes • hydraulic vertical shoring • close timber shoring • aluminium shoring shields • powerbrace • lite box aluminium panels • slide rails
Erect shoring may include:	• using trench shoring mechanisms including:

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	• closed timber sheeting • soldier sets • segmental sections • trench shields • using shoring securing mechanisms including: • footings • needles • anchors • sole plates • struts • brackets

Unit Sector(s)

Civil Works (Common Units)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICFW302A Install temporary and permanent rock anchors

Modification History

Not applicable.

Unit Descriptor

This unit covers the installation of temporary and permanent rock anchors in the civil construction industry. It includes planning and preparing, setting up and preparing anchor holes, installing anchors to anchor holes, setting up anchorage assembly to stress anchors, and cleaning up. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Obtain, confirm and apply work instructions, including plans, specifications, quality requirements and operational details to the allotted task 1.3. Obtain and confirm ***safety requirements*** from the ***site*** safety plan and organisational policies and procedures, and apply to the allotted task 1.4. Identify, obtain and implement ***signage*** requirements from the project ***traffic*** management plan 1.5. Select ***plant***, ***tools and equipment*** to carry out tasks consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.6. Identify ***environmental protection requirements*** from the project environmental management plan, and confirm and apply to the allotted task
2. Set up and prepare anchor holes	2.1. Check components to verify conformity with job requirements 2.2. Grease, sheathe and assemble anchors to specifications 2.3. Prepare ***temporary anchors*** with spacers and fit grout tubes 2.4. Prepare permanent anchors with spacers, fit grout tubes and prepare external polyethylene sheath 2.5. Install anchors and sheaths to full depth, without damage and to specifications 2.6. Set up grouting plant and flow monitoring apparatus to design requirements 2.7. Mix and pump grout into hole
3. Install anchors to anchor holes	3.1. Check components to verify conformity with job requirements 3.2. Grease, sheathe and assemble anchors to specifications 3.3. Prepare ***temporary anchors*** with spacers

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	and fit grout tubes 3.4. Prepare permanent anchors with spacers, fit grout tubes and prepare external polyethylene sheath 3.5. Install anchors and sheaths to full depth, without damage and to specifications 3.6. Set up grouting plant and flow monitoring apparatus to design requirements 3.7. Mix and pump grout into hole
4. Set up anchorage assembly and stress anchors	4.1. Correctly place anchorage using packing materials as specified 4.2. Stress anchors to nominated loads 4.3. Lock off anchors to nominated loads as designed 4.4. Install mesh to job specification 4.5. Apply shotcrete to design depth, tolerance and job specification 4.6. Monitor permanent anchors at scheduled intervals to determine and record anchor's residual load 4.7. Cut anchors where required and seal to specification requirements
5. Clean up	5.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant, tools and equipment

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install temporary and permanent rock anchors:

- apply legislative, organisation and site requirements and procedures for installing temporary and permanent rock anchors
- apply legislative, organisation and site requirements and procedures for conducting earthworks
- organise work activities
- select and use relevant tools and equipment safely
- identify and report on hazards related to the worksite and work activity
- communicate effectively to receive and clarify work instructions

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install temporary and permanent rock anchors:

- site and equipment safety requirements
- foundation work
- temporary and permanent rock anchors and their installation techniques
- scaffolding and work platform installation
- construction principles
- processes for interpreting engineering drawings
- soil, sand, rock, clay, shale, gravel and silt types and characteristics
- water erosion
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSAs/safe work method statements

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installing temporary and permanent rock anchors • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of temporary and permanent rock anchor installation • working with others to undertake and complete the installation of temporary and permanent rock anchors that meets all of the required outcomes • consistent timely completion of temporary and permanent rock anchor installation that safely, effectively and efficiently meets the required outcomes • installation of a minimum of ten permanent anchor bolts, finished with mesh and shotcrete • installation of a minimum of ten temporary anchor bolts
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites

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	may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the installation of temporary and permanent rock anchors

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Safety requirements may include:	• OHS requirements are to be in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan. This may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances • safe operating procedures are to include but not be limited to recognising and preventing hazards associated with overhead and underground services, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • hazards and risks may include but not be limited to uneven/unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures related to equipment operation are to include but may not be limited to emergency shutdown and stopping, extinguishing fires, organisational First Aid requirements and evacuation
Site may include:	• cuttings • tunnels • embankments

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Signage may include:	• escort vehicle • highway traffic signs • site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Traffic may include:	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Plant, tools and equipment may include:	• compressors • pneumatic tools • spanners • drilling rigs • attachments • grouting rigs
Environmental requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust and clean-up management
Requirements may include:	• ground stabilisation • roof and wall support • stressing
Anchors may include:	• anchor bolts • cable anchoring • spiling bars • grouted anchors and bolts • mechanically anchored bolts • dowels
Temporary anchors be required for:	• construction processes • stability for temporary structures • stability to operating plant
Materials may include:	• anchor bolts • spiling bars • steel cables

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	• ribbed steel bards

Unit Sector(s)

Foundation Works

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIICWD503A Prepare work zone traffic management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the preparation, documentation and completion of work zone traffic management plans in Civil Construction. It includes the planning for the preparation, undertaking of the preparation, finalisation of the preparation processes and supporting the application of the preparation.

Application of the Unit

This unit requires the identification of plan inputs, production of calculations, drawings, plan options and solutions and specifications required for the implementation of work zone traffic management plan, it does not include the certification of the plan.
This unit is appropriate for those working in a management role or as a technical specialist, preparing and documenting work zone traffic management plans within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan for the preparation of work zone traffic management plans	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Identify and ***confirm*** the ***work zone traffic management plan project requirements and information*** 1.3. Prepare a ***preparation plan*** which makes best use of the available resources and meets the traffic management plans requirements
2. Undertake the work zone traffic management plan preparation	2.1. Interpret and analyse the relevant data and identify the available viable options for the work zone traffic management plan 2.2. Interpret and analyse relevant data and recommend the ***preferred option*** that best meets the required project outcomes 2.3. Complete the ***detailed plan*** of the work zone traffic management plan that safely, effectively and efficiently meets the required project outcomes 2.4. Prepare a cost estimate of the execution of the work zone traffic management plan 2.5. Participate in the review of the work zone traffic management plan preparation with peers and stakeholders 2.6. Complete the documentation of the work zone traffic management plan preparation 2.7. Monitor and coordinate the progress of other team members involved in the preparation process to ensure the effective and efficient completion of the plan 2.8. Gain approval of the plan
3. Finalise preparation processes of work zone traffic management plan	3.1. Ensure filing of preparation records is completed 3.2. Complete and submit preparation cost and other reporting 3.3. Participate in performance review of the preparation process 3.4. Seek client feedback and contribute to the verification of the plan 3.5. Close out all systems

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4. Support and review the application of the work zone traffic management plan	4.1. Provide clarification and advice to those applying the plan 4.2. Review the application of the plan and recommend changes for the continuous improvements of work zone traffic management plans 4.3. Contribute to the validation of the plan

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to prepare and document work zone traffic management plans:

- apply legislative, organisation and site requirements and procedures
- interpret plans and drawings
- interpret specifications
- interpret traffic management plan briefs
- interpret Australian and other appropriate standards
- interpret engineering survey information
- interpret hydrological data
- interpret meteorological data
- interpret cultural and heritage data
- carry out risk assessments
- interpret traffic analysis data
- determine traffic management plan capacity requirements
- select traffic management plan options
- size traffic management plan components
- provide leadership and coordination
- choose appropriate implementation techniques
- develop and apply design plans
- apply computer based design technology
- apply industry or government standard design software
- apply engineering graphical presentation techniques
- calculate flow rates, level of service, capacities and percentages
- maintain design cost records
- maintain design records
- provide clarification and advice
- apply client feedback techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to prepare and document work zone traffic management plans:

- risk assessment and management requirement and procedures
- statutory compliance requirements and procedures

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- occupational health and safety requirements and procedures
- environmental management requirements and procedures
- cultural and heritage requirements and procedures
- quality management requirements and procedures
- communication requirements and procedures
- Australian and other relevant standards requirements and procedures
- industry and organisational design procedures and practice
- principles of road user behaviour
- current industry best practice
- traffic management plan options
- traffic management plan geometric requirements
- potential hazards, constraints and conditions that may affect traffic management plan design and implementation
- current industry best practice in traffic management plan design and implementation
- techniques for choosing preferred options
- team leadership techniques
- operational techniques required for the execution of traffic management plan implementation tasks
- traffic management plan implementation structures capabilities
- cost estimation techniques
- design review principles and procedures
- documentation requirements
- reporting requirements and procedures
- design approval requirements and procedures
- design records filing requirements and procedures
- performance review requirements and procedures
- systems close out requirements and procedures

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the preparation and documentation of work zone traffic management plans • implementation of procedures and techniques for the safe, effective and efficient preparation and documentation of work zone traffic management plans • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable options and the selection of work zone traffic management plans that best meet the required outcomes • working with others to undertake and complete the preparation and documentation of work zone traffic management plans • consistent successful preparation and documentation of work zone traffic management plans
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

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	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge to apply in undertaking of the preparation and documentation of work zone traffic management plans
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required to meet the required outcomes
	  • identification of viable options and the selection of work zone traffic management plans that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary

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	evidence of the candidate's: • working with others to undertake and complete the preparation and documentation of work zone traffic management plans • provision of clear and timely required support and advice on the preparation and documentation of work zone traffic management plans
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation

Confirm may include:	• consultation with the client
	• consultation with others within the organisation
	• consultation with relevant authorities
	• conducting a risk assessment of the existing and potential hazards
	• obtaining further site data, including:
	  • known and potential hazards, constraints and conditions
	  • cultural and heritage data
	  • geological data
	  • geotechnical data
	  • hydrological data
	  • survey data
	  • meteorological data

Work zone traffic management plan may include:	• any work zone where:
	  • members of the public can interact with construction or delivery personnel, vehicles, plant and equipment;
	  • delivery vehicles can interact with construction personnel, vehicles, plant and equipment
	  • internal to the work zone, where construction personnel, plant and equipment interact
	• the work zone traffic management plan may

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	need to include the access roads to and from the public roads
Project requirements and information may include:	• project specifications • contractual requirements • client's requirements • project site geological data • project site hydrological data • project site engineering survey data • project site cultural and heritage constraints • existing project design and drawings • Australian or other relevant standards
Preparation plan may include:	• human resource requirements • design hardware and software • coordination requirements • scheduling • review requirements • preparation process communication and reporting requirements

Preferred option may include:	• cost
	• site constraints
	• available resources
	• risk assessment of:
	  • the existing conditions
	  • the application of the plan
	  • maintainability of the completed works

Detailed plan may include:	• calculations, including:
	  • level of service
	  • capacity
	  • construction materials and services quantities
	  • construction cost estimates
	• selection and specification of traffic management structures and systems, including:
	  • roundabouts
	  • mediums
	  • entry and exit lanes
	  • merging lanes
	  • traffic barriers
	  • lane marking requirements
	  • traffic speed limits
	  • traffic signals or control personnel

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	• warning signs • communication requirements and procedures • drawings • risk assessment of: • the existing conditions • the application of the plan • maintainability of the works • health, safety and environmental requirements • contribution to ancillary documentation, which may include: • preparation notes • construction notes • supplementary drawings • input to the specifications

Unit Sector(s)

Civil Works Design

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOHS202A Enter and work in confined spaces

Modification History

Not applicable.

Unit Descriptor

This unit covers the entering and working in confined spaces in resources and infrastructure industries. It includes planning and preparing for entry of confined spaces, entry and working in confined spaces, exiting confined spaces and cleaning up.

Application of the Unit

This unit is appropriate for those working in confined spaces (enclosed or partially enclosed) for the purpose of carrying out work or inspections and also is appropriate for those performing sentry or stand-by person roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining
- General construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for entering and working in confined spaces	1.1. Access, interpret and apply ***compliance documentation*** relevant to entering and working in confined spaces 1.2. Obtain, confirm and apply ***work instructions*** relevant to the allotted task 1.3. Obtain, confirm and apply ***safety requirements*** relevant to the allotted task 1.4. Obtained authorisation (***entry permit***) to enter the ***confined space*** is in accordance with regulatory requirements 1.5. Confirm the emergency response procedure is with the stand-by person 1.6. Identify, obtain and implement ***signage*** and barrier requirements as required by the project plan 1.7. Select tools and equipment to carry out tasks that are consistent with the requirements of the job and check them for serviceability and rectify or report any faults 1.8. Identify, confirm and apply to the allotted task the ***environmental protection requirements*** from the project environmental management plan 1.9. Position rescue equipment as required by the entry permit close to the point of entry
2. Enter and work in the confined space	2.1. ***Gain access*** to the confined space 2.2. Ensure that the atmosphere is tested and monitored for harmful elements in accordance with procedures 2.3. Apply tagging and lock-out procedures as required 2.4. Enter the confined space according to agreed procedure 2.5. Maintain ***communication*** with the stand-by person 2.6. Comply with entry permit requirements while carrying out designated work in confined space 2.7. Monitor and adhere to allocated entry time

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3. Exit confined space	3.1. Exit confined space according to agreed procedure 3.2. Recover tools, equipment and materials from the confined space 3.3. Conduct inspection of the confined space 3.4. ***Secure access*** according to site procedures 3.5. Remove tagging and lock-out according to site procedures 3.6. Complete confined space entry permit
4. Clean up	4.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 4.2. Clean, check, maintain and store ***tools and equipment*** in accordance recommendations and standard work practices 4.3. Remove, clean and store barriers and signs

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to enter and work in confined spaces:

- apply legislative, organisation and site requirements and procedures
- apply operational, maintenance and basic diagnostic procedures
- apply materials handling methods
- use atmospheric monitoring devices
- interpret JSAs/Safe work method statements

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following as required to enter and work in confined spaces:

- site and equipment safety requirements
- confined space entry and exit procedures, risks and regulations
- air contaminants and toxic gases
- breathing apparatus limitations
- equipment types, characteristics, technical capabilities and limitations
- site isolation and site control responsibilities and authorities
- materials safety data sheets (MSDS)
- project quality requirements
- industry terminology
- state and territory interpretations of a confined space

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for entering and working in confined spaces • implementation of requirements, procedures and techniques for the safe, effective and efficient completion for entering and working in confined spaces • working with others to undertake and complete the entering and working in confined spaces that meet all of the required outcomes • consistent timely completion of entering and working in confined spaces that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non

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	English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular work sites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the entering and working in confined spaces

Guidance information for assessment	• Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may include:	• plans • specifications • quality requirements • operational details

Safety requirements may be included in:	• site safety plans
	• organisational policies and procedures
	• statutory/regulatory authorities which may include:
	  • federal
	  • state and
	  • local authorities
	• verbal or written and graphical instructions
	• signage
	• work schedules/plans/specifications
	• work bulletins
	• charts and hand drawings
	• memos
	• maps
	• materials safety data sheets (MSDS)
	• diagrams or sketches
	• safe work procedures or equivalent related to working in confined spaces
	• regulatory/legislative requirements pertaining to working in confined spaces
	• manufacturer's specifications and instructions
	• organisation's work specifications and

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	requirements • instructions issued by authorised organisational or external personnel • relevant Australian standards
Safety requirements may include:	• OHS requirements • personal protective clothing and equipment as prescribed under legislation, regulation and workplace policies and practices • use of tools and equipment • workplace environment and safety • handling of materials • use of fire fighting equipment • use of First Aid equipment • hazard control and hazardous materials and substances • safe operating procedures including recognising and preventing hazards associated with working in confined spaces, working in proximity to others, worksite visitors and the public • hazards and risks may include but not be limited to fires, underground services, excavations, traffic, hazardous materials, contaminated atmosphere and toxic gases • risks associated with confined spaces may include but not be limited to restricted means of entry and exit, atmosphere which contains potentially harmful levels of contaminant, unsafe oxygen levels or engulfment • respiratory protection devices are to include but not be limited to air purifying respirators and may include self contained compressed air breathing apparatus, supplied airline breathing apparatus and escape breathing apparatus and atmospheric monitoring devices
Confined space **entry permit**, or work permits, may include:	• location of work • duration of work • size of work crew • atmospheric testing requirements • personal protective equipment • hot work • stand-by personnel • rescue arrangements • other precautions (signs, barriers)

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	• authorisation
Confined spaces may include:	• storage tanks, tank cars, process vessels, boilers, pressure vessels, silos and other tank-like compartments • open-topped spaces such as pits or degreasers • pipes, sewers, shafts, ducts and similar structures • shipboard spaces entered through a small hatchway or access point, cargo tanks, cellular double bottom tanks, duct keels, ballast and oil tanks and void spaces (but not including dry cargo holds)
Signage may include:	• site safety signage • temporary signage for the benefit of motorists • pedestrians and barricades
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust • clean-up management
Gain access may include:	• removing access cover • installing and securing ladder
Communications may include:	• verbal instructions • fault reporting • 2-way radio • hand signals • mobile phone • site specific instructions • written instructions • instructions related to job/task
Secure access may include:	• replacing or closing off access cover
Tools and equipment may include:	• harness and lifeline • respirator apparatus • atmospheric testing equipment • signs • barricades • communication devices • tools and equipment relevant to the work to be

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	performed

Unit Sector(s)

Occupational Health and Safety

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOHS205A Control traffic with stop-slow bat

Modification History

Not applicable.

Unit Descriptor

This unit covers controlling of traffic with a stop-slow bat in resources and infrastructure industries. It includes: planning and preparing; coordinating traffic; operating radios; and cleaning up.

Application of the Unit

This unit is appropriate for those working in a operational roles, at worksites within:

- Civil construction
- Coal mining
- Drilling
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to controlling of traffic with a stop-slow bat 1.2. Obtain, confirm and apply ***work instructions*** relevant to the allotted task 1.3. Obtain, confirm and apply ***safety requirements*** from the site safety plan and organisational policies and procedures for the allotted task 1.4. Identify, obtain and implement ***signage and devices*** requirements from the project traffic management plan 1.5. Select ***tools and equipment*** to carry out tasks that are consistent with the requirements of the job; check them for serviceability and rectify or report any faults 1.6. Identify, confirm and apply ***environmental*** protection requirements from the project environmental management plan
2. Coordinate traffic	2.1. Position or confirm temporary traffic signs and barriers in accordance with regulations 2.2. Direct traffic in accordance with site traffic plan and away from services or areas of potential damage or danger 2.3. Control vehicles and pedestrian traffic within the worksite to ensure safety of workers 2.4. Monitor traffic, and make adjustments for changing ***conditions***, and position waiting vehicles to allow for smooth traffic flow 2.5. Use hand held stop/slow bats in accordance with regulatory authority approved procedures 2.6. Use hand signals in accordance with regulatory authority approved procedures 2.7. Report traffic offenders in accordance with regulatory authority approved procedures
3. Operate radio	3.1. Adjust ***radio*** controls for optimum reception/transmission results 3.2. Transmit messages concisely and in

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	accordance with operating procedures or best practice 3.3. Maintain radio power supply 3.4. Check radio contact after nominated period of non contact
4. Clean up	4.1. Remove or cover signs and devices sequentially to provide warning to motorists during shutdown 4.2. Clean, check, maintain and store tools and equipment in accordance with recommendations and standard work practices

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to control traffic with a stop-slow bat:

- apply legislative, organisation and site requirements and procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to control traffic with a stop-slow bat:

- site and equipment safety requirements
- traffic controlling
- traffic management plans
- traffic control signage and barricades
- radio operations
- equipment types, characteristics, technical capabilities and limitations
- operational and maintenance procedures for equipment
- site isolation and traffic control responsibilities and authorities
- affects of travel speed and vehicle mass on stopping distances
- quality requirements
- JSAs/Safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for controlling traffic with a stop-slow bat • implementation of requirements, procedures and techniques for the safe, effective and efficient control of traffic with a stop-slow bat • working with others to control traffic with a stop-slow bat that meets all of the required outcomes • consistent timely control of traffic with a stop-slow bat that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes of the workplace context. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

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	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to control traffic with a stop-slow bat

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may be received via verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, maps, materials safety data sheets (MSDS) and diagrams or sketches and may include:	• plans • specifications • quality requirements • operational details • safe work procedures or equivalent • regulatory/legislative requirements • manufacturers' specifications and instructions • organisation work specifications and requirements • instructions issued by authorised organisational or external personnel • relevant Australian Standards

Safety requirements may include:	• those included in compliance documentation
	• personal protective equipment
	• safe operating procedures, including recognising and preventing hazards associated with:
	  • uneven/unstable terrain
	  • trees
	  • pits
	  • poles
	  • trip hazards
	  • dirt mounds
	  • overhead services

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	• underground services
	• bridges
	• surrounding buildings
	• obstructions
	• structures
	• facilities
	• fires
	• excavations
	• traffic
	• embankments
	• cuttings
	• hazardous materials
	• recently filled trenches
	• other machines
	• personnel
	• restricted access barriers
	• traffic control
	• working in proximity to others
	• worksite visitors and the public
	• safe parking practices, including:
	  • ensuring access ways are clear
	  • equipment/machinery is away from overhangs and refuelling sites
	  • safe distance from excavations
	  • secured from unauthorised access or movement

Signage and devices are to include:	• temporary warning signs • regulatory and traffic cones
Signage and devices may include:	• vehicle mounted signs and flashing lights • guide signs • warning signs • barriers • hazard markers • bollards • arrow boards
Tools and equipment are to include:	• radio • stop-slow bat • high visibility vest • traffic cones • signage

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Tools and equipment may include:	• warning lights and beacons • arrow boards
Environmental include the requirements of the organisational/ project environmental management plan, and may include:	• waste management • water quality protection • noise, vibration and dust management • clean-up management
Trafficconditions may include	• congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas
Radios may include:	• VHF and UHF

Unit Sector(s)

Occupational Health and Safety

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIOHS302A Implement traffic management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the competency required to implement a traffic management plans in the civil construction industry. It includes: planning and preparing; setting out, monitoring and closing down the traffic guidance scheme; and cleaning up.

Application of the Unit

These traffic management plans include those for public and private roads, parking areas and restricted access construction sites. This unit is appropriate for those working in a operational roles, at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to implement a traffic management plans 1.2. Obtain, confirm and apply ***work instructions*** relevant to the allotted task 1.3. Obtain, confirm and apply ***safety requirements*** from the site safety plan and organisational policies and procedures to the allotted task 1.4. Identify, obtain and implement ***signage and devices*** requirements from the project traffic management plan 1.5. Select ***tools and equipment*** to carry out tasks that are consistent with the requirements of the job, check them for serviceability and rectify or report any faults 1.6. Identify, confirm and apply ***environmental*** protection requirements from the project environmental management plan to the allotted task 1.7. Check the designated traffic controllers' training and qualifications for currency as per legislation 1.8. Advise traffic controllers of the traffic flow requirements for the site
2. Set out the traffic guidance scheme	2.1. Select traffic guidance scheme to suit site ***conditions***, traffic volumes and work activities 2.2. Determine and ensure adherence to work schedule, maximum traffic delays, signals and site ***communications*** 2.3. Ensure signs and devices are correctly positioned on the approaches to the work area in accordance with the traffic management plan 2.4. Ensure that signs and devices are positioned and displayed on each approach according to Road Authority requirements and the traffic management plan 2.5. Ensure signs and devices are positioned

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	laterally and displayed in accordance with Road Authority requirements 2.6. Ensure traffic is controlled effectively to protect the work crew placing traffic control devices around the work area
3. Monitor traffic guidance scheme	3.1. Ensure traffic flow is monitored and effectiveness of guidance scheme determined 3.2. Monitor work activities and provide guidance to adjust scheme 3.3. Apply process for dealing with traffic controllers when they fail to adhere to the approved procedures 3.4. Apply procedures to deal with offending motorists
4. Close down traffic guidance scheme	4.1. Ensure traffic is controlled to protect work crew removing traffic control devices from the work area 4.2. Ensure signs are removed in sequence to provide maximum warning during removal of traffic control devices 4.3. Ensure guidance scheme details are recorded to organisational and or Road Authority requirements 4.4. Ensure incidents are reported as required by the organisation and/or Road Authority
5. Clean up	5.1. Ensure work area is cleared in accordance with the project environmental management plan 5.2. Ensure tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and standard work practices

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to implement a traffic management plan:

- apply legislative, organisation and site requirements and procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to implement a traffic management plan:

- site and equipment safety requirements
- state and territory traffic management legislation
- requirements set down by the Manual for Uniform Traffic Control Devices
- potential hazards
- traffic controlling
- traffic management plans
- basic signalling
- signs and devices
- radio operations
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- processes for the calculation of travel speed
- quality requirements
- civil construction terminology
- JSAs/Safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for implementing of traffic management plans
	• implementation of requirements, procedures and techniques for the safe, effective and efficient implementing of traffic management plans, which are to include:
	  • complying with State/Territory regulations on three separate live traffic projects, and
	  • one project controlling site construction vehicles
	• working with others to undertake and complete the traffic management plans that meet all of the required outcomes
	• consistent timely implementation of traffic management plans that safely, effectively and efficiently meets the required outcomes

Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

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	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to implement traffic management plans

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Work instructions may be received via verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, charts and hand drawings, memos, maps, materials safety data sheets (MSDS) and diagrams or sketches and may include:	• specifications • quality requirements • operational details • safe work procedures or equivalent • regulatory/legislative requirements • manufacturers' specifications and instructions • organisation work specifications and requirements • instructions issued by authorised organisational or external personnel • relevant Australian standards

Safety requirements may include:	• those included in compliance documentation
	• personal protective equipment
	• safe operating procedures, including recognising and preventing hazards associated with:
	  • uneven/unstable terrain
	  • trees
	  • pits
	  • poles
	  • trip hazards
	  • dirt mounds
	  • overhead services
	  • underground services

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	• bridges
	• surrounding buildings
	• obstructions
	• structures
	• facilities
	• fires
	• excavations
	• traffic
	• embankments
	• cuttings
	• hazardous materials
	• recently filled trenches
	• other machines
	• personnel
	• restricted access barriers
	• traffic control
	• working in proximity to others
	• worksite visitors and the public
	• safe parking practices, including:
	  • ensuring access ways are clear
	  • equipment/machinery is away from overhangs and refuelling sites
	  • safe distance from excavations
	• secured from unauthorised access or movement
	• emergency procedures

Signage and devices are to include	• temporary warning signs • regulatory and traffic cones
Signage and devices may include:	• vehicle mounted signs and flashing lights • guide signs • warning signs • barriers • hazard markers • portable traffic signals • bollards • arrow boards
Tools and equipment are to include:	• high visibility vests • cones • signage • notebooks

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	• pens • radios • stop-slow bats • delineators • barricades • barriers • bollards • warning lights and beacons • arrow boards • signalling devices
Environmental include the requirements of the organisational/ project environmental management plan, and may include:	• waste management • water quality protection • noise, vibration, dust management • clean-up management
Conditions may include:	• varying terrain • all weather conditions • varying road surfaces • all vehicle types • rural, urban or residential localities • all times of day • varying traffic volumes • varying road types • congested urban environments • low traffic rural areas • off-road un-trafficked areas • buildings • parking sites • pedestrian areas • civil construction site • road where civil construction work is conducted
Communications is to include:	• verbal instructions • fault reporting
Communications may include:	• 2-way radio • hand signals • mobile phone • site specific instructions • written instructions • instructions related to job/task

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Unit Sector(s)

Occupational Health and Safety

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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RIIWMG203A Drain and dewater civil construction site

Modification History

Not applicable.

Unit Descriptor

This unit covers draining and/or dewatering of civil construction project sites. It includes: planning and preparing; positioning sedimentation control; remove surface water; constructing sump and wells; removing water from sumps or wells, trenches and pits; and cleaning up.

Application of the Unit

This unit specifies the competency required to drain and/or dewater civil construction project sites for environmental protection purposes and the control of water, which may affect construction. It is appropriate for those working in a operational roles, at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply ***compliance documentation*** relevant to ***draining and/or dewatering project sites*** 1.2. Obtain, confirm and apply ***work instructions*** relevant to the tasks to the allotted task 1.3. Obtain, confirm and apply safety requirements from the site safety plan and organisational policies and procedures, to the allotted task 1.4. Identify, obtain and implement ***signage requirements*** from the project traffic management plan 1.5. Select plant, tools and equipment to carry out tasks that are consistent with the requirements of the job, check them for serviceability and rectify or report any faults 1.6. Identify, confirm and apply ***environmental*** protection requirements from the project environmental management plan to the allotted task
2. Position sedimentation control	2.1. Position sedimentation controls according to project environmental management plan 2.2. Construct sedimentation control barriers in accordance with the environmental management plan 2.3. Position geo-fabrics and/or woven wire according to specification and to the environmental management plan
3. Remove surface water	3.1. Establish temporary drainage systems to drain or divert surface and sub-surface water to the storm water drainage system 3.2. Remove slab and site surface water and/or directed to the temporary drainage system 3.3. Fill surface holes and depressions 3.4. Drain surface water to drainage system using adequate fall
4. Construct sump/wells	4.1. Locate sump and/or well at the lowest point to be drained to maximise pump efficiency 4.2. Construct sumps and/or wells to work

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	instructions
5. Remove water from sumps/wells, trenches and pits	5.1. Install surface or submersible pumps 5.2. Locate surface pump as close as practicable to the sump or well 5.3. Pump water to temporary drainage system according to the project environmental management plan 5.4. Disperse discharged water using approved procedures
6. Clean up	6.1. Clear work area and dispose of or recycle ***materials*** in accordance with project environmental management plan 6.2. Clean, check, maintain and store plant, ***tools and equipment*** in accordance with manufacturer's recommendations and standard work practices

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to drain and dewater civil construction site:

- apply legislative, organisation and site requirements and procedures
- apply operational, maintenance and basic diagnostic procedures
- apply pump operating requirements and procedures

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to drain and dewater civil construction site:

- site and equipment safety requirements
- drainage and dewatering
- sedimentation controls
- grading and levelling
- free water
- pumps
- environmental considerations
- construction principles
- processes for interpreting engineering drawings
- equipment types, characteristics, technical capabilities and limitations
- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSA's/Safe work method statement

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:
	• knowledge of the requirements, procedures and instructions for draining and dewatering of civil construction site
	• implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the draining and dewatering of civil construction site, which is to include:
	  • draining surface water from a site using surface drains
	  • dewater a trench or pit using at least one type of pump on two separate projects
	  • establishing sedimentation controls for at least one project, and
	  • constructing a sump
	• working with others to undertake and complete the draining and dewatering of civil construction sites that meets all of the required outcomes
	• consistent timely completion of the draining and dewatering of civil construction sites that safely, effectively and efficiently meets the required outcomes

Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment

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	skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes, including:
	  • draining surface water from a site using surface drains
	  • dewater a trench or pit, using at least one type of pump on two separate projects
	  • establishing sedimentation controls for at least one project
	  • constructing a sump
	  • consistently achieving the required

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	outcomes • first hand testimonial evidence of the candidate's: • working with others to undertake and complete the draining and dewatering of civil construction site
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Relevant compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Areas to be **drained and/or dewatered** are to include:	• control of surface water, bores, coffer dam, springs, creeks, wetland water, seepage water in trenches and pits and low lying natural ground where water may not escape
Drainage is to include:	• graded surface level gutters and ditches excavated manually or by machine and various types of plastic piping
Dewatering techniques are to include:	• sumps, wells, submersible pumps, vacuum pumps, surface pumps and sludge pumps
Project sites include:	• road construction sites, excavation projects and construction sites in close proximity of wetlands or active water
Work instructions may include:	• plans, specifications, quality requirements and operational details • quality requirements may include: dimensions, tolerances, standards of work and material standards as detailed in the project drawings, specifications and project documentation to meet client satisfaction
Safety requirements may be from the site safety plan and organisational policies and procedures and may include:	• protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of first aid equipment, hazard control and hazardous materials and substances • safe operating procedures, which are to include: recognising and preventing hazards

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	associated with underground services, other machines, personnel, traffic control, working in proximity to others, worksite visitors and the public • hazards and risks, which may include: uneven/ unstable terrain, trees, fires, overhead and underground services, bridges, buildings, excavations, traffic, embankments, cuttings, structures and hazardous materials • emergency procedures, which are to include: emergency shutdown and stopping, extinguishing equipment fires, organisational first aid requirements and evacuation
Traffic **signage** and devices are to include:	• temporary warning signs, regulatory and traffic cones
Traffic **signage** and devices may include:	• highway traffic signs, site safety signage, guide signs, warning signs, barriers, hazard markers, portable traffic signals, bollards, arrow boards, vehicle mounted signs, flashing lights, barricades, and traffic conditions signage
Environmental Requirements are to include:	• organisational/project environmental management plan, waste management, water quality protection, noise, vibration, dust and clean-up management
Materials are to include:	• various types of plastic piping, silt fences, rocks or straw bales
Tools and equipment are to include:	• hoses, shovels and pumps

Unit Sector(s)

Water Management

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.

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TAEDEL402A Plan, organise and facilitate learning in the workplace

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to plan, organise and facilitate learning for individuals in a workplace.

Application of the Unit

Application of the unit	This unit typically applies to a person working as an entry level trainer, teacher or facilitator, team leader or workplace supervisor, or any employee responsible for guiding learning through work.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish effective work environment for learning	1.1. Establish and agree upon objectives and scope of the work-based learning 1.2. Analyse work practices and routines to determine their effectiveness in meeting established learning objectives 1.3. Identify and address ***OHS implications*** of using work as the basis for learning
2. Develop a work-based learning pathway	2.1. Address ***contractual requirements*** and responsibilities for learning at work 2.2. Arrange for integration and monitoring of external learning activities with the ***work-based learning pathway*** 2.3. Obtain agreement from relevant personnel to implement the work-based learning pathway
3. Establish the learning-facilitation relationship	3.1. Identify context for learning and individual's learning style 3.2. Select appropriate technique or process to facilitate learning and explain the basis of the technique to learner 3.3. Develop, document and discuss ***individualised learning plan*** with learner 3.4. Access, read and interpret documentation outlining the OHS responsibilities of the various parties in the learning environment 3.5. Monitor supervisory arrangements appropriate to learner's levels of knowledge, skill and experience to provide support and encouragement and ensure learner's health and safety
4. Implement work-based learning pathway	4.1. Sequence introduction of workplace tasks, activities and processes to reflect the agreed work-based learning pathway 4.2. Explain objectives of work-based learning and the processes involved to learner 4.3. Encourage learner to take responsibility for learning and to self-reflect 4.4. Develop techniques that facilitate learner's transfer of skills and knowledge
5. Maintain and develop the learning/facilitation	5.1. Prepare for each session 5.2. Structure learning activities to support and reinforce new learning, build on strengths, and identify areas

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ELEMENT	PERFORMANCE CRITERIA
relationship	for further development 5.3. Observe learner cues and change approaches where necessary to maintain momentum 5.4. Practise ***ethical behaviour*** at all times 5.5. Monitor effectiveness of the learning/facilitation relationship through regular meetings between the parties
6. Close and evaluate the learning/facilitation relationship	6.1. Carry out the closure smoothly, using appropriate interpersonal and communication skills 6.2. Seek feedback from learner on the outcomes achieved and value of the relationship 6.3. Evaluate and document process, including ***impact***, ***self evaluation and reflection***, and file according to legal and organisational requirements
7. Monitor and review the effectiveness of the work-based learning pathway	7.1. Document work performance and learning achievement and keep records according to organisational requirements 7.2. Evaluate effectiveness of the work-based pathway against the objectives, processes and techniques used 7.3. Recommend improvements to work-based practice in light of the review process

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- oral communication and language skills to:
  - motivate the learner
  - transfer skills and knowledge
- interpersonal skills to maintain appropriate relationships
- observation skills to monitor individual progress
- literacy skills to:
  - read and interpret organisational documents, legal documents and contracts
  - complete and maintain documentation
- organisational skills to provide guidance and feedback to individuals
- communication skills, including:
  - using effective verbal and non-verbal language
  - using critical listening and questioning techniques
  - giving constructive and supportive feedback
  - assisting learners to paraphrase advice or instructions back to the trainer/facilitator
  - providing clear and concrete options and advice
  - using appropriate industry/profession terminology and language
  - ensuring language, literacy and numeracy used is appropriate to learners

Required knowledge

- systems, processes and practices within the organisation where work-based learning is taking place
- operational demands of the work and impact of changes on work roles
- organisational work culture, including industrial relations environment
- systems for identifying skill needs
- introductory knowledge of different learning styles and how to encourage learning in each, for example:
  - visual learners
  - audio learners
  - kinaesthetic learners
  - theoretical learners
- relevant policy, legislation, codes of practice and national standards that may affect training and assessment in the vocational education and training sector
- OHS relating to the work role, including:
  - hazards relating to the industry and specific workplace

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REQUIRED SKILLS AND KNOWLEDGE
• reporting requirements for hazards and incidents • specific procedures for work tasks • safe use and maintenance of relevant equipment • emergency procedures • sources of OHS information

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	Assessment must address the scope of this unit and reflect all components of the unit. Arange of appropriate assessment methods and evidence-gathering techniques must be used to determine competency. A judgement of competency should only be made when the assessor is confident that the required outcomes of the unit have been achieved and that consistent performance has been demonstrated.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the ability to:
	• prepare and facilitate work-based learning
	• provide evidence of a minimum of two examples of developing work-based learning pathways, that include:
	  • identifying needs for learning
	  • analysing work practices, work environment and work activities
	  • organising and allocating work in a way that reflects learning needs and provides effective learning opportunities through work processes
	• provide a minimum of two examples of a learning facilitation relationship being conducted:
	  • with different individuals
	  • demonstrating communication skills and flexibility
	  • demonstrating one or more of the processes or techniques identified.

Context of and specific resources for assessment	Evidence must be gathered in the workplace wherever possible. Where no workplace is available, a simulated workplace must be provided. Assessment must ensure access to information about work activities.
Method of assessment	
Guidance information for assessment	For further information about assessment of this and other TAE units, refer to relevant implementation guidance published on the IBSA website (www.ibsa.org.au).

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
OHS implications may include:	• OHS obligations • workplace OHS policies and procedures • ensuring work practices, routines and proposed changes do not pose a risk to learners and others.
Contractual requirements may include:	• training plans under apprenticeships/traineeships • requirements of government-funded training programs, such as Workplace English Language and Literacy (WELL).
Work-based learning pathway may include:	• identifying specific goals for work-based learning • identifying job tasks or activities to be included in learning process • appropriate sequencing of job tasks/activities to reflect learner incremental development • direct guidance and modelling from experienced co-workers and experts • opportunities for practice.
Individualised learning plan may include:	• information about individual's learning style, learner characteristics, and the context for learning • clear boundaries and expectations of the learning/facilitation relationship • documented equity or additional support needs for the learner • performance benchmarks to be achieved • activities and processes which together will achieve the benchmarks.
Ethical behaviour includes:	• trust • integrity • privacy and confidentiality of the session • following organisational policies • knowing own limitations • having a range of other intervention referrals ready when needed • honesty

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RANGE STATEMENT	
	• fairness to others.
Impact may be:	• successful achievement, rate of achievement, or lack of achievement of identified goals • achievement of other outcomes as a result of the relationship • development of new goals • new or increased motivation to learn • greater capacity to learn • increase in learner's self-confidence.

Self-evaluation and reflection may include:	• asking critical questions about:
	  • own ability
	  • what worked or didn't work
	  • how the relationship building process could be improved
	• reviewing records and journals on sessions and critically evaluating own performance
	• reviewing feedback from learner and identifying critical aspects and areas for improvement.

Unit Sector(s)

Unit sector	Delivery and facilitation

Competency field

Competency field	

Co-requisite units

Co-requisite units		

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TLIB3011A Set up and rig crane for lift

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor

This unit involves the skills and knowledge required to set up and rig a mobile crane for a lift, including the systematic positioning and stabilisation of the crane and its assembly. Licensing, legislative, regulatory or certification requirements are applicable to this unit.

Application of the Unit

Application of the Unit

Work must be carried out in compliance with the licence/permit requirements and regulations of the relevant state/territory authorities pertaining to mobile crane operations.

Work is performed with limited or minimum supervision, with limited accountability and responsibility for self and others in achieving the prescribed outcomes. It involves the application of routine principles and procedures to the setting up and rigging of a crane prior to lift in a variety of operational contexts.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

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Employability Skills Information

Employability Skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Position and stabilise crane	1.1 Crane is directed to position as per job plan to ensure safe operation in accordance with applicable Australian Standards, codes of practice and manufacturers specifications
	1.2 Ground is checked to ensure it is firm enough to bear the load
	1.3 Appropriate plates or packing are correctly used to adequately distribute the load
	1.4 Any outriggers and stabilisers are correctly deployed and positioned in accordance with manufacturers instructions and the appropriate Australian Standard and other relevant statutory regulations
	1.5 Outrigger packing is checked for adequacy prior to and after lift is taken
2 Assemble crane	2.1 The block is reeved in accordance with manufacturers instructions
	2.2 Any counterweights are installed to manufacturers specifications
	2.3 Any attachments are set up in accordance with manufacturers instructions
	2.4 A qualified rigger is consulted and other personnel are assisted as necessary to ensure efficient and safe assembly and set-up of crane
	2.5 Straight fly jibs and luffing fly jibs are assembled and fitted in accordance with manufacturers instructions

Required Skills and Knowledge

REQUIRED KNOWLEDGE AND SKILLS

This describes the essential knowledge and skills and their level required for this unit.

Required knowledge:

- Relevant road rules, regulations, permit and licence requirements pertaining to mobile crane operation and rigging of mobile cranes
- Relevant OH&S and environmental procedures and regulations
- Mobile crane applications, capacities, configurations, safety hazards and control mechanisms
- Operational procedures for crane crews
- Procedures for prioritising and multi-tasking work
- Procedures for fitting attachments and fly jibs

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REQUIRED KNOWLEDGE AND SKILLS

- Company work procedures concerning the setting up and rigging of a mobile crane at a worksite
- Focus of operation of work systems and equipment
- Application of relevant agreements, codes of practice or other legislative requirements
- Procedures for the identification and correct use of equipment, processes and procedures

Required skills:

- Communicate effectively with others when setting up and rigging a crane for a lift
- Read and interpret instructions, procedures, information and signs relevant to the setting up and rigging of a crane for a lift
- Interpret and follow operational instructions and prioritise work
- Complete documentation related to the setting up and rigging of a crane for a lift
- Operate electronic communication equipment to required protocol
- Work collaboratively with others when setting up and rigging a crane for a lift
- Adapt appropriately to cultural differences in the workplace, including modes of behaviour and interactions with others
- Promptly report and/or rectify any identified problems, faults or malfunctions in accordance with regulatory requirements and workplace procedures
- Implement contingency plans for unexpected events
- Apply precautions and required action to minimise, control or eliminate hazards that may exist when setting up and rigging a crane for a lift
- Monitor work activities in terms of planned schedule
- Modify activities depending on differing operational contingencies, risk situations and environments
- Work systematically with required attention to detail without injury to self or others, or damage to goods or equipment
- Operate and adapt to differences in equipment in accordance with standard operating procedures
- Select and use required personal protective equipment conforming to industry and OH&S standards
- Monitor condition of equipment
- Fit fly jibs and attachments

Evidence Guide

EVIDENCE GUIDE

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EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	• The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of:
	  • applying the underpinning knowledge and skills
	  • applying relevant legislation and workplace procedures
	  • applying procedures for fitting attachments and fly jibs
	  • demonstrating an understanding of the consultation processes

Context of and specific resources for assessment	• Performance is demonstrated consistently over a period of time and in a suitable range of contexts
	• Resources for assessment include:
	  • a range of relevant exercises, case studies and/or other simulated practical and knowledge assessment, and/or
	  • access to an appropriate range of relevant operational situations in the workplace
	• In both real and simulated environments, access is required to:
	  • relevant and appropriate materials and equipment, and
	  • applicable documentation including workplace procedures, regulations, codes of practice and operation manuals

Method of assessment	• As a minimum, assessment of knowledge must be conducted through appropriate written/oral tests
	• Practical assessment must occur:
	  • through appropriately simulated activities at the registered training organisation, and/or
	  • in an appropriate range of situations in the workplace

Range Statement

RANGE STATEMENT

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RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

Operations may be conducted:	• by day or night • in a variety of weather conditions • using a workcage/workbox • using a superlift attachment (300t and over cranes)
Environment may include:	• movement of equipment, goods, materials and vehicular traffic
Customers may be:	• internal or external
Mobile crane may be involved in work in a range of industry sectors including:	• construction and demolition • manufacturing • waterfront • mining • primary industry • utilities (electricity, gas, water) • arboricultural • swimming pool • quarrying
Hazards may include:	• power lines • noise, light, energy sources • overhead service lines • surrounding buildings, structures, facilities • underground services • obstructions • uneven or unstable ground and recently filled trenches • stationary and moving machinery and equipment • hazardous or dangerous materials • traffic hazards and congestion • other vehicles and personnel
Hazard management is:	• consistent with the principle of hierarchy of control with elimination, substitution, isolation and engineering control measures being selected before safe working practices and personal protective equipment
Consultative processes may involve:	• other employees and supervisors • management • union representatives • clients • industrial relations and OH&S specialists • other professional or technical staff

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RANGE STATEMENT

Requirements for access and/or lift may include:	• dogman/rigger • site restrictions and procedures • authorities and permits • hours of operation • induction • slings, chains, nets, brackets and other specialised lifting equipment • noise restrictions • personal protective equipment • support trucks • additional gear and equipment • communications equipment
Personal protective equipment may include:	• gloves • safety headwear and footwear • sunscreen, sunglasses and safety glasses • two-way radios • high visibility clothing

Documentation/records may include:	• site plans
	• Safe Working Load (SWL) and Working Load Limit (WLL)
	• operations manuals including load charts and crane and rigging manuals
	• induction documentation
	• competency standards and training materials
	• job specifications and procedures
	• manufacturers specifications
	• workplace operating procedures and policies
	• supplier and/or client instructions
	• communications technology equipment, oral, aural or signed communications
	• personal and work area work procedures and practices
	• conditions of service, legislation and industrial agreements including:
	  • workplace agreements and awards
	  • occupational health&safety procedures
	  • standards and certification requirements
	  • quality assurance procedures
	  • emergency procedures

Applicable regulations and legislation may include:	• relevant state/territory regulations and licence/permit requirements pertaining to mobile cranes

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RANGE STATEMENT

- relevant state/territory road rules
- relevant state/territory OH&S legislation
- relevant state/territory environmental protection legislation

Unit Sector(s)

Not Applicable

Competency Field

Competency Field B - Equipment Checking and Maintenance

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TLIB3013A Maintain mobile cranes

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor

This unit involves the skills and knowledge required to carry out routine maintenance of a mobile crane, including obtaining and confirming job instructions and work specifications, coordinating the loading of gear and equipment, assessing job requirements and work areas, designing the job plan and setting up the work area. Licensing, legislative, regulatory or certification requirements are applicable to this unit.

Application of the Unit

Application of the Unit

Work must be carried out in compliance with the licence/permit requirements and regulations of the relevant state/territory authorities pertaining to mobile crane operations and maintenance.

Work is performed under general supervision, with some accountability and responsibility for self and others in achieving the prescribed outcomes. It involves the application of routine maintenance principles and procedures to servicing and maintenance of mobile cranes in a variety of operational contexts.

This unit applies to maintenance activity on equipment used by the operator and is limited to lubrication, fluid, filter and accessory changing and checks for cracks, surface or structural faults or other damage.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

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Employability Skills Information

Employability Skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Plan maintenance operations	1.1 Tags, service records, log books and crane manufacturers information are read prior to commencing maintenance, noting previously identified and manufacturers recommendations
	1.2 Maintenance schedules are read and maintenance tasks noted to match the schedule
	1.3 A step by step procedure is worked out to minimise time delays and to sequence maintenance processes consistent with manufacturers recommendations
2 Complete pre-maintenance checks	2.1 Appropriate safe work area is selected for conduct of maintenance
	2.2 Required tools, consumables and equipment are identified and assembled
	2.3 Equipment is inspected for visible faults and loose or damaged components
3 Identify and assess any faults found	3.1 Conditions found are compared with manufacturers information and intended use of crane
	3.2 Conditions noticed which may cause difficulties in the future are identified and the potential effect on the safe and efficient operation of the mobile crane is documented
	3.3 Potential fault conditions are reported to the appropriate personnel
4 Conduct maintenance operations and safety check	4.1 Fluid replacements and lubrication operations are completed
	4.2 Fluid levels are checked and adjusted
	4.3 Mechanical components are checked for secure attachments and tensions
	4.4 Mechanical adjustments are made
	4.5 The maintenance plan is followed and appropriate adjustments are made to the plan to deal with unexpected events
	4.6 Own work and crane system operations are checked to ensure that the crane's operational condition is to the required specifications
	4.7 Tools, equipment and unused consumables are returned to the appropriate locations and waste is disposed of within workplace policy and procedures
5 Complete maintenance records	5.1 Accurate reporting of the results of the safety check and the maintenance conducted is completed and filed in accordance with procedures, industry guidelines and any statutory requirements
	5.2 Clear reference in reports is made to any items which may not yet require maintenance but may affect the future working

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ELEMENT	PERFORMANCE CRITERIA
	condition or safety of the mobile crane

Required Skills and Knowledge

REQUIRED KNOWLEDGE AND SKILLS

This describes the essential knowledge and skills and their level required for this unit.

Required knowledge:

- Relevant regulations, permit and licence requirements pertaining to mobile crane operational safety and maintenance
- Relevant OH&S and environmental procedures and regulations
- Mobile crane applications, capacities, configurations, safety hazards and control mechanisms
- Operational safety and maintenance procedures for crane crews
- Use, characteristics, capabilities and limitations of the lubrication and adjustment tools and equipment
- Workplace procedures for the planning of mobile crane jobs and the setting up of work areas
- Guidelines relating to the safe use of machinery and equipment
- Focus of operation of crane systems and equipment
- Application of relevant agreements, codes of practice or other legislative requirements

Required skills:

- Communicate effectively with others when maintaining a mobile crane
- Read and interpret instructions, procedures, information and signs relevant to the maintenance of a mobile crane
- Interpret and follow operational instructions and prioritise work
- Complete documentation related to the maintenance of a mobile crane
- Work collaboratively with others when maintaining a mobile crane
- Adapt appropriately to cultural differences in the workplace, including modes of behaviour and interactions with others
- Promptly report and/or rectify any identified problems, faults or malfunctions in accordance with regulatory requirements and workplace procedures
- Plan own work including predicting consequences and identifying improvements
- Identify non-conformities which may compromise operational capability
- Implement contingency plans for unexpected maintenance issues
- Apply precautions and required action to minimise, control or eliminate hazards that may exist during work activities

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Required skills:

- Prioritise and multi-task work when maintaining a mobile crane
- Monitor work activities in terms of planned maintenance schedule
- Modify activities depending on differing operational contingencies, risk situations and environments
- Work systematically with required attention to detail without injury to self, others, or damage to goods or equipment
- Operate and adapt to differences in equipment in accordance with standard operating procedures
- Select and use required personal protective equipment conforming to industry and OH&S standards
- Identify and correctly use crane equipment and related maintenance processes and procedures
- Service equipment in terms of maintenance schedule and standard operating procedures
- Check and replenish fluids and carry out lubrication processes when maintaining a mobile crane

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	• The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of applying: • the underpinning knowledge and skills • relevant legislation and workplace procedures • other relevant aspects of the range statement
Context of and specific resources for assessment	• Performance is demonstrated consistently over a period of time and in a suitable range of contexts • Resources for assessment include: • a range of relevant exercises, case studies and/or other simulated practical and knowledge assessment, and/or • access to an appropriate range of relevant operational situations in the workplace • In both real and simulated environments, access is required to:

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EVIDENCE GUIDE

	• relevant and appropriate materials and equipment, and • applicable documentation including workplace procedures, regulations, codes of practice and operation manuals

Method of assessment	• Assessment of this unit must be undertaken by a registered training organisation
	• As a minimum, assessment of knowledge must be conducted through appropriate written/oral tests
	• Practical assessment must occur:
	  • through activities in an appropriately simulated environment at the registered training organisation, and/or
	  • in an appropriate range of situations in the workplace

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

Operations may be conducted:	• day or night • in a variety of weather conditions
Environment may include:	• movement of equipment, goods, materials and vehicular traffic
Customers may be:	• internal or external
Mobile crane may be involved in work in a range of industry sectors including:	• construction and demolition • manufacturing • waterfront • mining • primary industry • utilities (electricity, gas, water) • arboricultural • swimming pool • quarrying
Maintenance may include:	• routine inspections of crane and its associated equipment • checks prior to operations • checks on completion of operations

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RANGE STATEMENT

Routine checks/servicing may include:	• checks on completion of repairs • checking and topping up of water levels • replacement of oils • replacement of air in tyres • checking pressure, fluid leaks, temperature • checking tightness of bolts, fixtures, attachments and fittings to ensure they are within specifications • checking for cracks, surface or structural faults or other damage
Depending on the type of organisation concerned and the local terminology used, workplace procedures may include:	• company procedures • enterprise procedures • organisational procedures • established procedures
Safety checks may include:	• warning devices • operating lights or audible cues • braking and transmissions • lifting devices • steering and suspension • windscreen wipers • isolation switches and shut down devices • mechanical, electrical, electronic, hydraulic or pneumatic components
Hazards may include:	• power lines • noise, light, energy sources • overhead service lines • surrounding buildings, structures, facilities • underground services • obstructions • uneven or unstable ground and recently filled trenches • stationary and moving machinery and equipment • hazardous or dangerous materials • traffic hazards and congestion • other vehicles and personnel
Hazard management is:	• consistent with the principle of hierarchy of control with elimination, substitution, isolation and engineering control measures being selected before safe working practices and personal protective equipment
Consultative processes may involve:	• other employees and supervisors • management • union representatives

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RANGE STATEMENT

	• clients • industrial relations and OH&S specialists • other professional or technical staff
Requirements for access and/or lift may include:	• site restrictions and procedures • authorities and permits • hours of operation • induction • slings, chains, nets, brackets and other specialised lifting equipment • noise restrictions • personal protective equipment • support trucks • additional gear and equipment • communications equipment
Personal protective equipment may include:	• gloves • safety headwear and footwear • sunscreen, sunglasses and safety glasses • two-way radios • high visibility clothing

Documentation/records may include:	• codes of practice and regulatory requirements concerning crane maintenance and safety
	• operations manuals including load charts and crane and rigging manuals
	• competency standards and training materials
	• job specifications and procedures
	• manufacturers specifications
	• workplace operating procedures and policies
	• supplier and/or client instructions
	• material safety data sheets
	• communications technology equipment, oral, aural or signed communications
	• personal and work area procedures and practices
	• induction documentation
	• conditions of service, legislation and industrial agreements including:
	  • workplace agreements and awards
	  • occupational health&safety procedures
	  • standards and certification requirements
	  • quality assurance procedures
	  • emergency procedures

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RANGE STATEMENT

Applicable regulations and legislation may include:	• relevant state/territory regulations pertaining to the maintenance and safety of mobile cranes • relevant state/territory OH&S legislation • relevant state/territory environmental protection legislation

Unit Sector(s)

Not Applicable

Competency Field

Competency Field	B - Equipment Checking and Maintenance

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TLIB3015A Undertake site inspection

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor

This unit involves the skills and knowledge required to undertake a site inspection in preparation for a lift requiring a mobile crane, including arranging the site inspection, clarifying customer requirements, defining job requirements and completing necessary records. Licensing, legislative, regulatory or certification requirements are applicable to this unit.

Application of the Unit

Application of the Unit

Work must be carried out in compliance with the licence/permit requirements and regulations of the relevant state/territory authorities pertaining to mobile crane operations and safety.

Work is performed with general supervision, with some accountability and responsibility for self and others in achieving the prescribed outcomes. It involves the application of routine principles and procedures to conduct of site inspections prior to mobile crane lifts in a variety of operational contexts.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

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Employability Skills Information

Employability Skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Arrange site inspection	1.1 Available information about customer requirements is obtained from relevant personnel
	1.2 Need for site inspection is confirmed through appropriate questioning and discussion
	1.3 Mutually acceptable meeting time is arranged with customer
	1.4 Full customer details are recorded according to workplace procedures
2 Clarify customer requirements	2.1 Customer needs and perception of job are clearly established through appropriate questioning and discussion
	2.2 Alternative job methods are suggested where applicable and a safe and cost effective method negotiated with the customer
	2.3 Clients ability to provide any necessary competent personnel is ascertained
3 Define job requirements	3.1 Information regarding load and movement requirements is accessed and any necessary measurements are taken to enable accurate estimation of job requirements
	3.2 Specific scheduling needs are ascertained taking into account legislative and customer requirements
	3.3 Information from site inspection and customer is used to identify hazards and contingencies
	3.4 Specific site and job requirements are identified
	3.5 Lift study is arranged as required to provide additional information or meet customer expectations
	3.6 Necessity to be on site during lift is assessed in line with workplace policy taking into consideration complexity of job, potential hazards and expertise of available personnel
	3.7 Need for permits/authorisations is determined
4 Complete records	4.1 Required records are updated accurately, legibly and promptly according to workplace procedures
	4.2 Records include all relevant information about the job

Required Skills and Knowledge

REQUIRED KNOWLEDGE AND SKILLS

This describes the essential knowledge and skills and their level required for this unit.

Required knowledge:

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REQUIRED KNOWLEDGE AND SKILLS

- Relevant road rules, regulations, permit and licence requirements pertaining to mobile crane operation and safety
- Relevant OH&S and environmental procedures and regulations
- Mobile crane applications, capacities, configurations, safety hazards and control mechanisms
- Site inspection procedures and protocols
- Operational procedures for crane crews for the conduct of a site inspection for a lift using a mobile crane
- Guidelines relating to the safe use of machinery and equipment
- Focus of operation of work systems and equipment
- Application of relevant agreements, codes of practice or other legislative requirements

Required skills:

- Communicate effectively with others when conducting a site inspection for a lift using a mobile crane
- Read and interpret instructions, procedures, information and signs relevant to a site inspection for a lift using a mobile crane
- Interpret and follow operational instructions and prioritise work
- Complete documentation related to a site inspection for a lift using a mobile crane
- Work collaboratively with others when conducting a site inspection for a lift using a mobile crane
- Plan own work including predicting consequences and identifying improvements
- Prioritise and multi-task work
- Adapt appropriately to cultural differences in the workplace, including modes of behaviour and interactions with others
- Promptly report and/or rectify any identified problems that may be identified when conducting a site inspection for a lift using a mobile crane in accordance with regulatory requirements and workplace procedures
- Implement contingency plans for unexpected events that may occur when conducting a site inspection for a lift using a mobile crane
- Apply precautions and required action to minimise, control or eliminate hazards that may exist during work activities
- Monitor work activities in terms of planned schedule
- Modify activities depending on differing operational contingencies, risk situations and environments
- Work systematically with required attention to detail without injury to self or others, or damage to goods or equipment
- Operate and adapt to differences in equipment in accordance with standard operating procedures

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Required skills:

- Identify and correctly use equipment, processes and procedures
- Select and use required personal protective equipment conforming to industry and OH&S standards

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	• The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of applying:
	  • the underpinning knowledge and skills
	  • relevant legislation and workplace procedures
	  • other relevant aspects of the range statement

Context of and specific resources for assessment	• Performance is demonstrated consistently over a period of time and in a suitable range of contexts
	• Resources for assessment include:
	  • a range of relevant exercises, case studies and/or other simulated practical and knowledge assessment, and/or
	  • access to an appropriate range of relevant operational situations in the workplace
	• In both real and simulated environments, access is required to:
	  • relevant and appropriate materials and equipment, and
	  • applicable documentation including workplace procedures, regulations, codes of practice and operation manuals

Method of assessment	• Assessment of this unit must be undertaken by a registered training organisation • As a minimum, assessment of knowledge must be conducted through appropriate written/oral tests • Practical assessment must occur: • through activities in an appropriately simulated

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EVIDENCE GUIDE

	environment at the registered training organisation, and/or • in an appropriate range of situations in the workplace

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

Operations may be conducted:	• day or night • in a variety of weather conditions
Environment may include:	• movement of equipment, goods, materials and vehicular traffic
Customers may be:	• internal or external
Mobile crane may be involved in work in a range of industry sectors including:	• construction and demolition • manufacturing • waterfront • mining • primary industry • utilities (electricity, gas, water) • arboricultural • swimming pool • quarrying
Sites may include:	• building and construction sites • demolition sites • wharves • tree lopping/removal sites • mining sites
Hazards may include:	• power lines • noise, light, energy sources • overhead service lines • surrounding buildings, structures, facilities • underground services • obstructions • uneven or unstable ground and recently filled trenches • stationary and moving machinery and equipment

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RANGE STATEMENT

	• hazardous or dangerous materials • traffic hazards and congestion • other vehicles and personnel
Hazard management is:	• consistent with the principle of hierarchy of control with elimination, substitution, isolation and engineering control measures being selected before safe working practices and personal protective equipment
Consultative processes may involve:	• other employees and supervisors • management • union representatives • clients • industrial relations and OH&S specialists • other professional or technical staff
Requirements for access and/or lift may include:	• site restrictions and procedures • authorities and permits • hours of operation • induction processes • slings, chains, nets, brackets and other specialised lifting equipment • noise restrictions • personal protective equipment • support trucks • additional gear and equipment • communications equipment
Personal protective equipment may include:	• gloves • safety headwear and footwear • sunscreen, sunglasses and safety glasses • two-way radios • high visibility clothing
Depending on the type of organisation concerned and the local terminology used, workplace procedures may include:	• company procedures • enterprise procedures • organisational procedures • established procedures
Documentation/records may include:	• site plan • Safe Working Load (SWL) and Working Load Limit (WLL) • operations manuals including load charts and crane and rigging manuals • induction documentation • competency standards and training materials

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RANGE STATEMENT

- job specifications and procedures
- manufacturers specifications
- workplace operating procedures and policies
- supplier and/or client instructions
- communications technology equipment, oral, aural or signed communications
- personal and work area work procedures and practices
- conditions of service, legislation and industrial agreements including:
  - workplace agreements and awards
  - occupational health&safety procedures
  - standards and certification requirements
  - quality assurance procedures
  - emergency procedures

Applicable regulations and legislation may include:

- relevant state/territory regulations and licence/permit requirements pertaining to mobile cranes
- relevant state/territory road rules
- relevant state/territory OH&S legislation
- relevant state/territory environmental protection legislation

Unit Sector(s)

Not Applicable

Competency Field

Competency Field B - Equipment Checking and Maintenance

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TLIF2006A Apply accident-emergency procedures

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor

This unit involves the skills and knowledge required to apply accident emergency procedures, including responding to an incident, controlling and assisting at an accident or emergency site, finalising accident-emergency processes, and completing records, reports and other required documentation in accordance with regulatory requirements and workplace procedures. Licensing, legislative, regulatory or certification requirements are applicable to this unit.

Application of the Unit

Application of the Unit

Work must be carried out in accordance with OH&S codes/regulations and workplace requirements.

Work is performed under limited supervision. It involves the application of regulatory requirements and workplace procedures when responding to accident/emergencies in the workplace.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

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Employability Skills Information

Employability Skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Respond to the incident	1.1 Response to the incident or accident is in accordance with workplace emergency procedures and relevant regulatory requirements 1.2 Details of the cause(s) and effects of the incident are identified and reported 1.3 Assistance requirements for accidents and emergencies are clarified and reported immediately to the appropriate parties 1.4 Requests for assistance are made to relevant personnel and emergency services
2 Control and assist at accident or emergency site	2.1 Site is controlled and protected until the arrival of authorised personnel 2.2 Assistance is provided to injured persons, within the limitations of duty of care and workplace procedures 2.3 Relevant authorities at the site are cooperated with and assisted within workplace policies
3 Finalise accident - emergency process and complete records	3.1 Relevant information is exchanged in accordance with state/territory law and workplace procedures 3.2 Documentation and reports are completed and processed in accordance with workplace and relevant regulatory requirements

Required Skills and Knowledge

REQUIRED KNOWLEDGE AND SKILLS

This describes the essential knowledge and skills and their level required for this unit.

Required knowledge:

- Relevant regulatory and code requirements applicable in accident/emergency situations
- Relevant OH&S and environmental protection policies and procedures
- Workplace procedures for accident-emergency response
- Workplace emergency, fire and accident procedures
- Site layout
- Focus of operation of work systems, equipment or management, site and organisational operating and emergency procedures
- Typical problems that can occur during a safety incident, accident or emergency and related action that can be taken

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Required skills:

- Communicate effectively with others when responding to an accident or an emergency
- Read and interpret instructions, procedures and information relevant to a response to an accident or an emergency
- Interpret and follow operational instructions and prioritise work
- Negotiate and resolve issues when responding to an accident or an emergency
- Complete documentation related to a response to an accident or an emergency
- Operate electronic communication equipment to required protocol
- Work collaboratively with others when responding to an accident or an emergency
- Adapt appropriately to cultural differences in the workplace, including modes of behaviour and interactions with others
- Promptly report and/or rectify any identified problems, faults or malfunctions in accordance with regulatory requirements and workplace procedures
- Implement contingency plans for unplanned events that may occur when responding to an accident or an emergency
- Analyse the working environment in order to identify hazards, assess safety risks and design and implement appropriate OH&S control procedures
- Apply precautions and required action to minimise, control or eliminate hazards that may exist when responding to an accident or an emergency
- Monitor work activities in terms of planned schedule
- Modify activities depending on differing operational contingencies, risk situations and environments
- Work systematically with required attention to detail without injury to self or others, or damage to goods or equipment
- Select and appropriately apply technology, information systems and policies during a safety incident, accident or emergency
- Operate and adapt to differences in equipment in accordance with standard operating procedures
- Select and use required personal protective equipment conforming to industry and OH&S standards

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

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EVIDENCE GUIDE

Critical aspects for assessment and evidence required to demonstrate competency in this unit	• The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of applying: • the underpinning knowledge and skills • relevant legislation and workplace procedures • other relevant aspects of the range statement
Context of and specific resources for assessment	• Performance is demonstrated consistently over a period of time and in a suitable range of contexts • Resources for assessment include: • a range of relevant exercises, case studies and/or other simulated practical and knowledge assessment, and/or • access to an appropriate range of relevant operational situations in the workplace • In both real and simulated environments, access is required to: • relevant and appropriate materials and equipment, and • applicable documentation including workplace procedures, regulations, codes of practice and operation manuals
Method of assessment	• Assessment of this unit must be undertaken by a registered training organisation • As a minimum, assessment of knowledge must be conducted through appropriate written/oral tests • Practical assessment must occur: • through activities in an appropriately simulated environment at the registered training organisation, and/or • in an appropriate range of situations in the workplace

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

Work may be conducted:	• in a range of work environments

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RANGE STATEMENT

Customers may be:	• by day or night • internal or external
Workplaces may comprise:	• large, medium or small worksites
Work may be conducted in:	• limited or restricted spaces • exposed conditions • controlled or open environments • even or uneven surfaces • wet or dry surfaces
Workplace hazards may include but are not restricted to:	• moving heavy loads in an unsafe work environment • unsecured machinery, components or repaired equipment • slippery floors • welding equipment • sharp tools and implements • power tools • moving and rotating machinery • flammable liquids, vapours and fuel • faulty machinery equipment handling equipment and lifting gear • using equipment beyond safe working limits • poor housekeeping procedures • non-compliance with safe working procedures • electrical wiring and systems, including exposed electrical circuits • working at heights and in confined spaces • toxic gases and substances • chemicals and other harmful substances • damaged goods, pallets and containers • dangerous/hazardous goods
Consultative processes may involve:	• OH&S specialists • trainers • other employees and supervisors • management • union representatives • manufacturers representatives • supplier representatives • customers/clients • other maintenance, professional or technical staff
Depending on the type of organisation concerned and the	• company plans/procedures • enterprise plans/procedures

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RANGE STATEMENT

local terminology used, workplace plans/procedures may include:	• organisational plans/procedures • established plans/procedures
Information/documentation may include:	• workplace accident-emergency procedures and policies • workplace OH&S management system including hazard/safety risk control strategies • OH&S training notes and materials • journals and work related literature concerning OH&S • competency standards • customer/client instructions • customer service standards and procedures • workplace products and services information • quality assurance standards and procedures • relevant agreements, codes of practice including the national standards for services and operations • manufacturers/suppliers' specifications, advice, recommended procedures, policies and instructions • workplace guidelines on appropriate workplace language and communication strategies and interpretation of relevant information • regulations and policies relating to minimising risks to the environment and ensuring compliance with OH&S requirements • emergency procedures

Applicable regulations and legislation may include:	• relevant regulations, standards and codes of practice
	• hazardous substances and dangerous goods codes
	• relevant Australian and state/territory OH&S legislation including regulations and codes of practice relating to hazards present in the workplace or industry, including:
	  • general duty of care under OH&S legislation and common law
	  • requirements for the maintenance and confidentiality of records of occupational injury and disease
	  • requirements for provision of OH&S information and training
	  • provisions relating to health and safety representatives and/or OH&S committees
	  • provisions relating to OH&S issue resolution
	• environmental protection regulations
	• relevant Australian standards and certification requirements including Australian Standard AS 1885.1

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Unit Sector(s)

Not Applicable

Competency Field

Competency Field F - Safety Management

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TLIF2010A Apply fatigue management strategies

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor

This unit involves the skills and knowledge required to apply fatigue management strategies, including identifying and acting upon signs of fatigue and implementing appropriate strategies to minimise fatigue during work activities, in accordance with legislative and regulatory requirements. Licensing or certification requirements are not applicable to this unit.

Application of the Unit

Application of the Unit

Persons achieving competence in this unit will need to fulfil the applicable federal and state/territory legislation and relevant regulations covering the management of fatigue in the workplace.

Work is performed under some supervision generally within a team environment. It involves the application of the relevant regulations, codes and guidelines of the federal government and state/territory authorities concerning fatigue management during work activities and in particular when operating equipment, trains, vehicles, load shifting equipment, marine vessels and aircraft.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

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Employability Skills Information

Employability Skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Identify and act upon signs of fatigue	1.1 Potential causes of fatigue are identified and action is taken to minimise their effects in accordance with company procedures 1.2 Personal warning signs of fatigue are recognised and necessary steps are taken in accordance with workplace procedures to ensure that effective work capability and alertness are maintained
2 Implement strategies to minimise fatigue	2.1 Workplace procedures are assessed to minimise fatigue 2.2 Factors which increase the risk of fatigue-related accidents and safety incidents are understood and minimised 2.3 Strategies to manage fatigue are implemented in accordance with company policy 2.4 Lifestyle choices are made which promote the effective long-term management of fatigue 2.5 Effective practices in combating fatigue are adopted and applied 2.6 Personal fatigue management strategies are communicated to other relevant people 2.7 Appropriate counter measures are planned to combat fatigue

Required Skills and Knowledge

REQUIRED KNOWLEDGE AND SKILLS

This describes the essential knowledge and skills and their level required for this unit.

Required knowledge:

- Relevant codes, regulations, permit and licence requirements related to fatigue management
- Relevant OH&S regulations as they relate to fatigue
- Workplace policies and procedures related to fatigue management and the control of factors that can contribute to fatigue and fatigue-related accidents
- Sources of information on fatigue
- The risks and hazards created by fatigue in the workplace
- How fatigue affects workplace performance
- How fatigue contributes to workplace accidents
- Ways of recognising fatigue
- Strategies and ways of managing fatigue
- Causes and effects of fatigue on workers/drivers
- Factors which increase fatigue-related accidents

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REQUIRED KNOWLEDGE AND SKILLS

- Lifestyles which promote the effective long-term management of fatigue

Required skills:

- Communicate effectively with others when applying fatigue management strategies
- Read and interpret instructions, procedures, regulations and signs related to fatigue management and apply them to work activities
- Recognise symptoms of fatigue and take appropriate action in accordance with fatigue management regulations and workplace procedures
- Work collaboratively with others to manage and minimise the effects of fatigue during work activities
- Adjust lifestyle patterns to ensure effective fatigue management during work activities
- Modify activities and take appropriate initiatives to manage fatigue in the workplace depending on differing work contexts, risk situations and environments
- Apply precautions and required action to minimise and control the effects of fatigue when carrying out own work functions
- Adapt to changes in rosters and standard operating procedures as they may relate to fatigue management
- Participate in identifying and meeting own learning needs on matters related to fatigue management

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	• The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of applying: • the underpinning knowledge and skills • relevant legislation and workplace procedures • other relevant aspects of the range statement
Context of and specific resources for assessment	• Performance is demonstrated consistently over a period of time and in a suitable range of contexts • Resources for assessment include: • a range of relevant exercises, case studies and

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EVIDENCE GUIDE

	other/or simulated practical and knowledge assessment, and/or • access to an appropriate range of relevant operational situations in the workplace • In both real and simulated environments, access is required to: • relevant and appropriate materials and/or equipment, and/or • applicable documentation including workplace procedures, regulations, codes of practice and operation manuals
Method of assessment	• Assessment of this unit must be undertaken by a registered training organisation • As a minimum, assessment of knowledge must be conducted through appropriate written/oral tests • Practical assessment must occur: • through activities in an appropriately simulated environment, and/or • in an appropriate range of situations in the workplace

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

Workplace may include:	• any work environment requiring safety critical operational judgements to be made and in particular when operating equipment, vehicles, load shifting equipment, trains, marine vessels and aircraft at night
The need for fatigue management in a range of industry situations including:	• operations conducted at all times but particularly at night • typical weather conditions • while working and/or driving at a workplace, depot, base or warehouse • while working and/or driving at a client's workplace or worksite • driving a motor vehicle on the open road • driving a motor vehicle on a private road • driving a train, locomotive or motive power unit • operating a marine vessel in coastal or international waters

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RANGE STATEMENT

	• operating an aircraft • operating load shifting equipment • operating safety critical industrial plant and equipment
Work-related factors that may contribute to fatigue include:	• work demands such as: workload, work duration, shift pattern, time of day, frequency and duration of breaks and the type of work (such as working in isolation, repetitive tasks and boring, monotonous or under-challenging tasks) • organisational factors such as: work environment (including temperature, ventilation, continual rhythmic vibration from equipment), payment system, trip and work scheduling, and the predictability of work
Worker/operator-related factors that may contribute to fatigue include:	• lifestyle factors such as: sleep patterns, alcohol and drug use, quantity and timing of food and drink, and opportunities for relaxation with family and friends • working multiple jobs • personal or biological factors such as: state of mental and/or physical health, inadequate sleep, sleep disorders, emotional stress, family responsibilities, relationship difficulties, inadequate competence to complete work tasks, and circadian rhythms
Responsibilities of individual for fatigue risk management may include:	• following the organisation's fatigue management policy and procedures • using time away from work appropriately to rest and recover • checking and ensuring fitness for work • reporting symptoms of fatigue • taking action to minimise risk when symptoms of fatigue are recognised
Schedules may include:	• rosters • vehicle schedules • timetabling • workplans
Depending on the organisation, operating procedures may include:	• standard operating procedures • company procedures • enterprise procedures • organisational procedures • established procedures
Information and documents may include:	• federal and state/territory regulations and guidelines concerning fatigue management in various transport and workplace situations • workplace instructions and procedures on fatigue management

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RANGE STATEMENT

	• relevant OH&S regulations and procedures • work schedules and shift rosters • emergency procedures • log book or record book (where required) • records and reports of fatigue-related errors and safety incidents • relevant standards and certification requirements • quality assurance procedures
Applicable legislation, regulations and codes may include:	• relevant regulations and codes of the federal government and the state/territory regulatory authorities concerning fatigue management • relevant state/territory road rules • relevant rail industry safe working codes and regulations (where applicable) • relevant state/territory permit regulations and requirements • relevant state/territory OH&S legislation

Unit Sector(s)

Not Applicable

Competency Field

Competency Field F - Safety Management

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TLIF3084A Follow mobile crane safety procedures

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor

This unit involves the skills and knowledge required to follow and apply mobile crane safety procedures and OH&S procedures when carrying out mobile crane operations. It includes identifying and following mobile crane and workplace procedures for hazard identification and risk control, contributing to arrangements for the management of occupational health and safety, and completing all relevant safety records. Licensing, legislative, regulatory or certification requirements are applicable to this unit.

Application of the Unit

Application of the Unit

Work must be carried out in compliance with the relevant mobile crane safety and workplace procedures and OH&S regulations and procedures.

Mobile crane operations are performed under some supervision generally within a team environment. It involves the application of established mobile crane and workplace procedures, OH&S and hazard minimisation principles and procedures to the conduct of mobile crane operations.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

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Employability Skills Information

Employability Skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Follow workplace and mobile crane safety procedures for hazard identification and risk control	1.1 Mobile crane and workplace procedures for dealing with accidents, fire and emergencies are known and followed 1.2 Mobile crane and workplace procedures for OH&S and related work instructions for controlling risks in a workplace are accurately followed 1.3 Mobile crane hazards and site hazards in the workplace are identified and appropriate action is taken to report them and to minimise or eliminate risk to personnel, workplace and the environment 1.4 Safety regulations and established mobile crane and workplace safety and hazard control practices and procedures are obtained, interpreted and applied to mobile crane operations 1.5 Where relevant, procedures and precautions necessary for entry into confined spaces in the workplace are correctly followed 1.6 Personal protection clothing and equipment is correctly used in accordance with established safety practices and procedures 1.7 Established mobile crane and workplace emergency and contingency plans are followed in the event of an emergency
2 Contribute to arrangements for management of mobile crane safety procedures and occupational health and safety	2.1 Mobile crane safety hazards and OH&S issues are identified and raised with designated personnel in accordance with workplace procedures and relevant OH&S legislation 2.2 Contributions to OH&S management in the workplace are made in accordance with workplace procedures and provisions of relevant legislation 2.3 Participative arrangements for mobile crane safety procedures and OH&S management in the workplace are contributed to within relevant workplace procedures and scope of responsibilities and competencies
3 Complete workplace and occupational health and safety records	3.1 Mobile crane and OH&S records are completed in accordance with workplace requirements 3.2 OH&S records and legal requirements for the maintenance of records of occupational injury and diseases are followed

Required Skills and Knowledge

REQUIRED KNOWLEDGE AND SKILLS

This describes the essential knowledge and skills and their level required for this unit.

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REQUIRED KNOWLEDGE AND SKILLS

Required knowledge:

- Relevant mobile crane safety procedures
- Relevant OH&S procedures and guidelines
- Risks associated with mobile cranes, and related precautions to control the risk
- Risks associated with multiple crane operations
- Hazards associated with crane operations on a demolition site
- Hazards associated with mobile crane operations on a construction site
- Lifting personnel using a workcage/workbox
- Reporting procedures in regard to unsafe situations, fire hazards, broken or damaged equipment or fittings, sickness and accidents
- Location and use of safety alarms, emergency shut-off systems, emergency communication systems
- Signs and signals used for warnings
- Terms used in material safety data sheets (where relevant)
- HAZCHEM symbols and implications for safe work and storage
- Storage and use of hazardous substances
- Handling of broken or damaged equipment
- Manual and mechanically assisted lifting and load shifting procedures
- Transport requirements for goods within workplace
- Mobile crane and workplace emergency and evacuation procedures
- Housekeeping standards and procedures required in the workplace
- Site layout and obstacles

Required skills:

- Communicate effectively with others when following mobile crane and OH&S procedures
- Read and comprehend simple statements in English
- Read and interpret relevant safety-related information including safety labels, instructions for safe work, relevant material safety data sheets, mobile crane and workplace procedures and codes of practice
- Identify containers and goods coding, ADG and IMDG markings and, where applicable, emergency information panels
- Interpret and follow operational instructions and prioritise work
- Complete documentation related to mobile crane procedures and OH&S in the workplace
- Operate electronic communication equipment to required protocol
- Estimate the size, shape and special requirements of loads
- Work collaboratively with others when following procedures

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Required skills:

- Adapt appropriately to cultural differences in the workplace, including modes of behaviour and interactions with others
- Promptly report and/or rectify any identified problems, faults or malfunctions that may arise when following mobile crane and OH&S procedures in accordance with regulatory requirements and workplace procedures
- Implement contingency plans for unanticipated situations that may occur when following mobile crane and OH&S procedures
- Apply precautions and required action to minimise, control or eliminate hazards that may exist during mobile crane operations and workplace activities
- Monitor work activities in terms of planned schedule
- Modify activities depending on differing operational contingencies, risk situations and environments
- Apply fatigue management knowledge and techniques
- Work systematically with required attention to detail without injury to self or others, or damage to goods or equipment
- Operate and adapt to differences in equipment in accordance with standard operating procedures
- Select and use required personal protective equipment conforming to industry and OH&S standards

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

- The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of applying:
  - the underpinning knowledge and skills
  - relevant legislation, mobile crane safety procedures and workplace procedures
  - procedures for identifying mobile crane safety hazards and OH&S issues
  - appropriate action to report identified mobile crane and site hazards in the workplace to minimise or eliminate risk to personnel, workplace and the

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EVIDENCE GUIDE

	environment • mobile crane and OH&S recording procedures in accordance with workplace requirements

Context of and specific resources for assessment	• Performance is demonstrated consistently over a period of time and in a suitable range of contexts
	• Resources for assessment include:
	  • a range of relevant exercises, case studies and/or other simulated practical and knowledge assessment, and/or
	  • access to an appropriate range of relevant operational situations in the workplace
	• In both real and simulated environments, access is required to:
	  • relevant and appropriate materials and equipment, and
	  • applicable documentation including workplace procedures, regulations, codes of practice and operation manuals

Method of assessment	• As a minimum, assessment of knowledge must be conducted through appropriate written/oral tests
	• Practical assessment must occur:
	  • through appropriately simulated activities at the registered training organisation, and/or
	  • in an appropriate range of situations in the workplace

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

The operations may be conducted:	• in a range of work environments • by day or night • using multiple cranes • using a workcage/workbox
Customers may be:	• internal or external
Workplaces may comprise:	• large, medium or small worksites • demolition sites

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RANGE STATEMENT

Work may be conducted in:	• construction site • restricted spaces • exposed conditions • controlled or open environments
Workplace hazards may include:	• chemicals and other harmful substances • electrical and other overhead services • movements of equipment, goods, vehicles • toxic substances • damaged packing material and containers • broken and damaged equipment • inflammable materials and fire hazards • lifting practices • waste management and disposal • extremes in weather conditions • lighting levels • floor surfaces • water hazards • traffic flows, vehicle and equipment operation • a range of storage areas
Personnel in the work area may include:	• workplace personnel • site visitors • OH&S specialists • union representatives • contractors • official representatives
Participative arrangements may include:	• formal and informal meetings which deal with OH&S issues • toolbox talks • workplace OH&S committees • other committees, for example, consultative, planning and purchasing • OH&S representatives • suggestions, requests, reports and concerns put forward by staff
Communication in the work area may include:	• phone • electronic data interchange (EDI) • fax • email • internet • radio/hand or whistle signals

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RANGE STATEMENT

Designated personnel may include:	• workplace personnel • supervisors • dogman/rigger • team leaders • management • occupational health and safety personnel • other persons authorised or nominated by the organisation
Personal protective equipment may include:	• gloves • safety headwear and footwear • safety glasses • two-way radios • high visibility clothing
Depending on the type of organisation concerned and the local terminology used, workplace procedures may include:	• company procedures • enterprise procedures • organisational procedures • established procedures
Information/documents may include:	• OH&S regulations • mobile crane safety procedures • workplace OH&S procedures and policies • codes of practice including the National Standards for Manual Handling and the Industry Safety Code • ADG Code and material safety data sheets (where relevant) • policies and procedures for entry and work in confined spaces • manufacturers instructions concerning the use and servicing of equipment • supplier and/or client instructions • emergency procedures • regulations and policies concerning noise, smoking, work station ergonomics and other critical OH&S issues • goods identification numbers and codes • manifests, bar codes, goods and container identification • relevant legislation, regulations and related documentation • award, enterprise bargaining agreement, other industrial arrangements • standards and certification requirements • quality assurance procedures
Regulations and legislation may include:	• relevant state/territory OH&S legislation and safety codes, including manual handling, noise, confined spaces, smoking, workplace ergonomics, etc.

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RANGE STATEMENT

- mobile crane codes of practice
- Australian Standards
- general duty of care under OH&S legislation
- workplace relations regulations
- workers compensation regulations
- dangerous goods regulations

Unit Sector(s)

Not Applicable

Competency Field

Competency Field F - Safety Management

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TLILIC2005A Licence to operate a boom-type elevating work platform (boom length 11 metres or more)

Modification History

Not Applicable

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Unit Descriptor

Unit Descriptor	This unit specifies the outcomes required to operate a boom-type elevating work platform (boom length 11 metres or more) for licensing purposes, and involves the operation of a telescoping device, hinged device, or articulated device or any combination of these used to support a platform on which personnel, equipment and materials may be elevated to perform work. The 11 metre boom length shall be taken to mean the greater of the following: (a) The vertical distance from the floor of the platform to the surface supporting the elevating work platform with the platform at its maximum height; or (b) The nominal reach, measured horizontally from the centre point of rotation to the outer edge of the platform in its most extended position.

Application of the Unit

Application of the Unit	This unit requires the operator to plan the work, conduct routine checks, set up elevating work platform, operate elevating work platform and shut down and secure elevating work platform. This unit is based on the requirements of the National Standard for Licensing Persons Performing High Risk Work. This unit in its current form meets state and territory licensing requirements. Any alteration will result in a unit which is not acceptable to regulators for the purpose of licensing.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

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Employability Skills Information

Employability Skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan work	1.1 Potential workplace ***hazards*** are identified 1.2 ***Hazard control measures*** are identified consistent with ***appropriate standards*** to ensure the safety of personnel and equipment 1.3 ***Elevating work platform*** is appropriate for the task 1.4 Appropriate ***communication methods*** are identified
2. Conduct routine checks	2.1 ***Service logbook*** for elevating work platform is checked for compliance 2.2 ***Elevating work platform*** is visually checked for any defects or damage according to ***procedures*** 2.3 Routine pre-operational checks are carried out according to ***procedures*** 2.4 ***Safety equipment*** is inspected according to ***procedures*** 2.5 ***Elevating work platform*** is accessed in a safe manner 2.6 Fit ***safety equipment*** and secure to platform according to ***procedures*** 2.7 All controls are located and identified 2.8 ***Elevating work platform*** is started according to ***procedures*** 2.9 All ***safety devices*** are identified and tested according to ***procedures*** 2.10 Post-start operational checks are carried out according to ***procedures*** 2.11 All ***communication equipment*** is checked (where applicable) 2.12 All defects and damage are reported and recorded in according to ***procedures***, and appropriate action is taken
3. Set up elevating work platform	3.1 **Ground** ***suitability*** is inspected and checked 3.2 Elevating work platform is driven to or located at work area according to ***procedures*** (where applicable) 3.3 Elevating work platform is positioned for work application and ***stability*** according to ***procedures*** 3.4 Appropriate ***hazard prevention/control measures*** are applied to the work area according to ***procedures*** 3.5 Work gear and tools are stowed and secured
4. Operate elevating work	4.1 ***Elevating work platform*** is operated using all ***relevant***

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ELEMENT	PERFORMANCE CRITERIA
platform	***plant movements*** according to ***procedures*** and the ***appropriate standards*** 4.2 ***Elevating work platform*** is mobiled using ***best mobile practice*** and appropriate ***procedures*** 4.3 Elevated working platform operations are monitored constantly ensuring safety of personnel and stability 4.4 ***Unplanned and/or unsafe situations*** are responded to in line with ***procedures***
5 Shut down and secure elevating work platform	5.1 ***Elevating work platform*** is lowered and stowed according to ***procedures*** 5.2 All relevant motion locks and brakes are applied (where applicable) 5.3 ***Safety equipment*** is disconnected from platform 5.4 Egress from ***elevated work platform*** is conducted according to ***procedures*** 5.5 Outriggers/stabilisers are stowed and secured according to ***procedures*** (where applicable) 5.6 Plates or packing are stowed and secured (where applicable) 5.7 Elevating work platform is ***shut down*** according to ***procedures*** 5.8 Routine post-operational checks are carried out according to ***procedures*** 5.9 All defects and damage are reported and recorded according to ***procedures***, and appropriate action is taken

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This describes the essential skills and knowledge and their level required for this unit.
Required skills:
• Accurately record and maintain information relating to elevating work platform operations • Assess ground conditions to confirm that the site is suitable (e.g. firm, level and safe) to extend and travel the elevating work platform

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REQUIRED SKILLS AND KNOWLEDGE
• Complete the positioning, stabilising, set up of elevating work platforms, including the use of outriggers/stabilisers and packing • Operate mobile elevating work platform using best mobile practice • Use communication skills at a level sufficient to communicate with other site personnel • Operate and control an elevating work platform including all functions to their maximum extension within the safe working (rated) capacity • Apply risk assessment and hazard control strategies, including hierarchy of control as applied to the positioning and safe operation of the elevating work platform (particular awareness of the risks associated with overhead powerlines/electrical cables, ground conditions, wind, pedestrians and tipping) • Use and interpret manufacturer's specifications and data • Identify problems and equipment faults and where practicable demonstrate appropriate response procedures
Required knowledge:
• Appropriate mathematical procedures for estimation of loads, to ensure that the elevating work platform is not overloaded • Commonwealth, state or territory OH&S legislation, standards and codes of practice relevant to the full range of processes for conducting elevating work platform operations • Ability to read and comprehend manufacturer's instructions, procedures and safety signs • Understanding of elevating work platform operations and operating techniques • Emergency procedures and safety equipment, including the use of safety harness, energy absorber, lanyard and anchor points • Understanding of organisational and workplace standards, requirements, policies and procedures for conducting elevating work platform operations • Understanding of the hierarchy of hazard identification and control • Procedures for the recording, reporting and maintenance of workplace records and information, including the use of the service logbook • Typical routine problems encountered in the process and with equipment and adjustments required for correction

Evidence Guide

EVIDENCE GUIDE
The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

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EVIDENCE GUIDE	
Overview of assessment	• Successful assessment of this unit meets the competency requirement of the National Standard for Licensing Persons Performing High Risk Work. • State/territory OH&S regulators have mandated the use of Assessment Instruments and Instructions for Assessment for this unit which have been endorsed by the national body responsible for OH&S matters.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	• Compliance with OH&S licensing legislation. • Emergency procedures and safety equipment, including the use of safety harnesses, energy absorbers, lanyard and anchor points. • Assessment of ground conditions to confirm that the site is suitable (e.g. firm, level and safe) to extend and travel the elevating work platform. • Risk assessment and hazard control strategies, including hierarchy of control as applied to the positioning and safe operation of the elevating work platform (particular awareness of the risks associated with overhead powerlines/electrical cables, ground conditions, wind, pedestrians and tipping). • Appropriate procedures for estimation of loads, to ensure that the elevating work platform is not overloaded. • Positioning and operation of the elevating work platform to ensure that the safest lift is performed.
Context of and specific resources for assessment	• Assessment of the safe and effective application of knowledge and skill to workplace tasks (performance) must be undertaken using the endorsed Assessment Instrument. • Assessment of performance must be undertaken either in the workplace or in a realistically simulated workplace. • Assessors must ensure that the assessment in the workplace is organised to ensure that all the required equipment and materials and a suitable working area is made available to suit the assessment and the workplace. • Assessment must occur under standard and authorised work practices, safety requirements and environmental constraints. • Assessment is to comply with relevant appropriate standard requirements. • Applicants must have access to:

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EVIDENCE GUIDE	
	• Personal Protective Equipment (PPE) for the purpose of the Performance Assessment • appropriate safety equipment in safe condition • appropriate elevated working platform and associated equipment in safe condition • communication equipment (e.g. two-way radios, mobile phones etc.) where applicable.
Method of assessment	• Assessment must be conducted using the endorsed Assessment Instruments. These Instruments provide advice on their application. • The use of '**simulators**' in the assessment of this unit of competency is **not acceptable**. • Assessment may be in conjunction with the assessment of other units of competency. • Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge. • Assessment must confirm a reasonable inference that competency is not only able to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.
Guidance information for assessment	• Further information about endorsed Assessment Instruments may be obtained from state/territory OH&S regulators.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** *wording, if used in the Performance Criteria, is detailed below.*	
Hazards	May include but not limited to: • ground stability (e.g. ground condition, recently filled trenches, slopes) • overhead hazards (e.g. powerlines, service pipes, trees, buildings etc.)

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RANGE STATEMENT	
	• insufficient lighting • traffic (e.g. pedestrians, vehicles, plant) • environmental conditions (e.g. wind, lightning, storms, etc.) • other specific hazards (e.g. tidal areas, chainsaws, pressure washers, dangerous materials)
Hazard control measures	Refers to the systematic process of eliminating or reducing the risk to personnel and property through the application of controls It includes the application of the hierarchy of control - the six-step preference of control measures to manage and control risk: 1. elimination 2. substitution 3. isolation 4. engineering control measures 5. using safe work practices 6. personal protective equipment
Appropriate standards	May include but not limited to: • codes of practice • legislation • Australian Standards • manufacturer's specifications • industry standards (where applicable)
Elevating work platform	The operation of a telescoping device, hinged device, or articulated device or any combination of these used to support a platform on which personnel, equipment and materials may be elevated to perform work. Excluded from this definition are platforms of less than 11 metres boom length. The 11 metre boom length shall be taken to mean the greater of the following: (a) The vertical distance from the floor of the platform to the surface supporting the elevating work platform with the platform at its maximum height; or (b) The nominal reach, measured horizontally from the centre point of rotation to the outer edge of the platform in its most extended position

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RANGE STATEMENT	
Communication method	May include but not limited to: • verbal and non-verbal language • written instructions • signage • hand signals • listening • questioning to confirm understanding • appropriate worksite protocol
Service logbook	May include but not limited to: • any logbook • service book • history record system where the service and maintenance history is kept
Procedures	May include but not limited to: • manufacturer's guidelines (instructions, specifications, operators manual or checklists) • industry operating procedures • workplace procedures (work instructions, operating procedures, checklists)
Safety equipment	May include but not limited to: • safety harness • energy absorber • lanyard • anchor points
Safety devices	May include but not limited to: • horns/sirens • audible and visual reversing devices • operator restraint devices (platform gate) • lights (where applicable)
Communication equipment	May include but not limited to: • two-way radios • mobile phone
Ground suitability	May include but not limited to: • rough uneven ground • backfilled ground • soft soils

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RANGE STATEMENT	
	• hard compacted soil • rock • bitumen • concrete
Stability	May include but not limited to: • deploying outriggers • establishing correct size plates or packing • correctly positioning plates or packing
Hazard prevention/control measures	May include but not limited to: • safety tags on electrical switches/isolators • insulated powerlines • safety observer used inside exclusion zone • disconnected power • traffic barricades and controls • illumination requirements • pedestrian controls • trench covers • movement of obstructions • personal protective equipment • suitable area for set-up • suitable firm and stable standing
Relevant plant movements	May include but not limited to: • raising boom • lowering boom • slewing • hinging • articulating • telescoping
Best mobile practice	May include but not limited to: • minimum speed • gentle acceleration and braking • minimum boom/jib length • avoiding ground depressions
Unplanned and/or unsafe situations	May include but not be limited to: • loss of power • failure of controls • contact with overhead electrical conductors

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RANGE STATEMENT	
	• damage caused by contact with obstructions • illness of personnel
Shut down	May include but not limited to: • retracting boom/jib (where applicable) • folding boom/jib into the transport position • retracting outriggers/stabilisers • idling engine to stabilise temperature • turning off engine (where applicable) • removing key from ignition (where applicable)

Unit Sector(s)

Not Applicable

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TLILIC2016A Licence to drive heavy rigid vehicle

Modification History

Not Applicable

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Unit Descriptor

Unit Descriptor

This unit involves the skills and knowledge required to obtain a licence to drive a heavy rigid vehicle. It includes systematic and efficient control of all vehicle functions, monitoring of traffic and road conditions, management of vehicle condition and performance and effective management of hazardous situations. Assessment of this unit will be undertaken within a licensing examination conducted by, or under the authority of, the relevant Heavy Vehicle Driver Licensing Authority.

Application of the Unit

Application of the Unit

Driving must be carried out in compliance with the licence requirements and regulations of the relevant state/territory roads and traffic authority pertaining to heavy rigid vehicles.

Driving is performed with limited or minimum supervision, with limited accountability and responsibility for self and others in achieving the prescribed outcomes.

Driving involves the application of routine vehicle driving principles and procedures to maintain the safety and operation of a heavy rigid vehicle across a variety of driving contexts.

Licensing/Legislative Requirements

The primary legislative requirements applicable to this unit of competency are State/Territory legislation in relation to road use and driver licensing.

This unit addresses the underlying knowledge and skills necessary for the granting of a Heavy Rigid Driver Licence. Drivers may require additional training to drive particular vehicles of the class or in particular contexts.

Obtaining this competency is a necessary pre-requisite for obtaining a Heavy Rigid Driver Licence. However, it is only one of several criteria for obtaining the licence. Prospective licence applicants should check with the State/Territory driver licensing authority for other criteria (for example: licence tenure and medical fitness) to confirm compliance with other eligibility requirements before undertaking training and/or assessment.

Licensing/Regulatory Information

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Refer to Unit Descriptor

Pre-Requisites

Not Applicable

Employability Skills Information

Employability Skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Drive the heavy rigid vehicle	1.1 The heavy rigid vehicle is started, steered, manoeuvred, positioned and stopped in accordance with traffic regulations and manufacturers instructions
	1.2 Engine power is managed to ensure efficiency and performance and to minimise engine and gear damage
	1.3 Braking system of heavy rigid vehicle is managed and operated to ensure effective control of the vehicle under all conditions
	1.4 Driving hazards are identified and/or anticipated and avoided or controlled through defensive driving
	1.5 The heavy rigid vehicle is driven in reverse, maintaining visibility and achieving accurate positioning.
	1.6 The heavy rigid vehicle is parked, shut down and secured in accordance with traffic regulations, safe and secure
	1.7 Load is safely and effectively restrained
	1.8 Where required, overwidth and overweight permit applications are undertaken in accordance with relevant regulatory requirements
	1.9 Appropriate procedures are followed in the event of a driving emergency
2 Monitor traffic and road conditions	2.1 An appropriate route of travel is observed taking into account prescribed routes.
	2.2 Traffic and road conditions are constantly monitored and acted upon to enable safe operation and ensure no injury to people or damage to property, equipment loads and facilities
	2.3 Interaction with other road users is conducted courteously and in accordance with road rules to ensure safe and efficient traffic flow
3 Monitor and maintain vehicle performance	3.1 Vehicle performance is maintained through pre-operational inspections and checks of the vehicle
	3.2 Appropriate signage, lights and the like are checked for operational effectiveness and for conformity to prescribed traffic regulations
	3.3 Performance and efficiency of vehicle operation is monitored during use

Required Skills and Knowledge

REQUIRED KNOWLEDGE AND SKILLS

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REQUIRED KNOWLEDGE AND SKILLS

This describes the essential knowledge and skills and their level required for this unit.

Required knowledge:

- Relevant road rules, regulations, permit and licence requirements of the relevant state/territory road traffic authority
- Relevant OH&S and environmental procedures and regulations
- Heavy rigid vehicle controls, instruments and indicators and their use
- Heavy rigid vehicle handling procedures
- Procedures to be followed in the event of a driving emergency
- Engine power management and safe driving strategies
- Efficient driving techniques
- Pre-operational checks carried out on heavy rigid vehicle and related action
- Differences between transmission types
- Principles of operation of air brakes and procedures for their use
- Map reading and navigation of the vehicle and related action (including prescribed routes)
- Driving hazards and related defensive driving techniques
- Principles of stress management when driving a vehicle
- Factors which may cause traffic delays and diversions and related action that can be taken by a driver
- Causes and effects of fatigue on drivers
- Fatigue management strategies and on-road techniques

Required skills:

- Communicate effectively with others when driving a heavy rigid vehicle
- Read and interpret instructions, procedures, information and signs relevant to when the driving of a heavy rigid vehicle
- Complete documentation related to the driving of a heavy rigid vehicle
- Apply precautions and required action to minimise, control or eliminate hazards that may exist when driving a heavy rigid vehicle
- Monitor and anticipate traffic hazards and take appropriate action
- Apply fatigue management knowledge and techniques
- Monitor performance of the vehicle and its equipment and take appropriate action where required
- Carry out pre-operational checks

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	• The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of applying:
	  • the underpinning knowledge and skills
	  • relevant legislation
	  • other relevant aspects of the range statement
	• Assessment of competency for this unit must be subject to the successful completion of the Mandatory Assessment Instrument as approved by the Licensing Authority

Context of and specific resources for assessment	• Performance is demonstrated consistently over a period of time and in a suitable range of contexts
	• Resources for assessment include:
	  • a range of relevant exercises, case studies and/or other simulated practical and knowledge assessment, and/or
	  • access to an appropriate range of relevant operational situations on road or in the workplace
	• In both real and simulated environments, access is required to:
	  • relevant and appropriate materials and equipment, and
	  • applicable documentation including regulations, codes of practice and operation manuals
	• The mandatory assessment tool provided by the Licensing Authority must be used to conduct the final assessment.
	• The Licensing Authority may prescribe approved routes which must be used for the conduct of the final assessment
	• Practical driving aspects must be assessed in a vehicle typical of the class as approved by the Licensing Authority. The use of simulators for driver testing is not permitted.

Method of assessment	• Assessment of this unit must be undertaken by a registered training organisation

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EVIDENCE GUIDE

- As a minimum, assessment of knowledge must be conducted through appropriate written/oral tests
- Practical assessment must occur:
  - through activities in an appropriately simulated environment at the registered training organisation, and/or
  - in an appropriate range of situations on road or in the workplace
- The assessor must use the mandatory assessment tool provided by the Licensing Authority to conduct the assessment for this unit in accordance with Licensing Authority requirements
- Practical driving aspects must be assessed in a vehicle typical of the class as approved by the Licensing Authority. The use of simulators for driver testing is not permitted.

EXCEPTION

Where the candidate is already the holder of a valid Australian driver licence of the Heavy Rigid class, the Licensing Authority has already deemed the candidate to be competent against this standard for the purposes of issuing a driver licence. In this case the requirement to conduct the assessment using the Mandatory Assessment Instrument provided by the Licensing Authority is waived and the assessor may use any suitable process and materials for conducting the assessment.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

Type of vehicle includes:	• all heavy rigid vehicles, for example any rigid vehicle with 3 or more axles, including trucks or buses, greater than 8 tonnes GVM
Driving may be carried out in typical road transport situations, including:	• operations conducted at day or night • typical weather conditions • on the open road • on a private road • while at a depot, base or warehouse • while at a client's workplace or work site
Driving must be carried out in typical road transport situations,	• negotiating hills • negotiating a range of more complex traffic infrastructure (for example; roundabouts, traffic lights, stalemate

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RANGE STATEMENT

including:	intersections, level crossings of railways)
Vehicle handling procedures may include:	• starting a vehicle • steering and manoeuvring a vehicle • accelerating and braking • positioning and stopping a vehicle • reversing a vehicle • operating vehicle controls, instruments and indicators • using air brakes • using defensive driving techniques • managing engine performance
Pre-operational checks may include:	• visual check of vehicle • checking and topping up of fluid levels • checks of tyre pressures • checks of operation of vehicle lights and indicators • checks of brakes
Driving hazards may include (examples only):	• wet and iced roads • oil on road • animals and objects on road • fire in vehicle • leaking fuel • faulty brakes • parked vehicles on the road • faulty steering mechanism on vehicle • pedestrians crossing the road • flooded sections of road • windy sections of road • foggy conditions
Factors that can cause traffic delays and diversions may include:	• traffic accidents • flooded sections of road • road damage • bridge/tunnel damage • road works • building construction • emergency situations such as bushfires, building fires, etc. • road closures for special events such as marches, parades, sporting events, etc • holiday traffic • road closures for utility works such as electricity, water, sewerage, telecommunications, gas, etc.
Documentation/records may	• state/territory heavy rigid vehicle driving licence and

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RANGE STATEMENT

include:	permit requirements • vehicle log book or record book (where required) • relevant standards and certification requirements
Applicable procedures and codes may include:	• relevant state/territory roads and traffic authority driving regulations and licence/permit requirements pertaining to heavy rigid vehicles • relevant state/territory road rules • relevant state/territory permit regulations and requirements • relevant state/territory OH&S legislation • relevant state/territory fatigue management regulations • relevant state/territory environmental protection legislation

Unit Sector(s)

Not Applicable

Competency Field

Competency Field LIC - Licensing Units

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TLILIC3006A Licence to operate a non-slewing mobile crane (greater than 3 tonnes capacity)

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor	This unit specifies the outcomes required to operate a mobile crane of greater than 3 tonnes capacity that incorporates a boom or jib which includes articulated type mobile cranes and locomotive cranes, but does not include vehicle tow trucks, for licensing purposes.

Application of the Unit

Application of the Unit	This unit requires the operator to plan the work, conduct routine checks, set up crane, transfer loads, mobile loads, and shut down and secure the crane. This unit is based on the requirements of the National Standard for Licensing Persons Performing High Risk Work. This unit in its current form meets state and territory licensing requirements. Any alteration will result in a unit which is not acceptable to regulators for the purpose of licensing.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

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Employability Skills Information

Employability Skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Not Applicable

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Elements and Performance Criteria

ELEMENT *Elements describe the essential outcomes of a unit of competency.*	**PERFORMANCE CRITERIA** *Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.*
1. Plan work	1.1 1.1 Potential workplace ***hazards*** are identified 1.2 ***Hazard control measures*** are identified consistent with ***appropriate standards*** to ensure the safety of personnel and equipment 1.3 The weight of the load is identified and estimated in consultation with ***associated personnel*** 1.4 ***Crane*** is ***appropriate*** to the load/s and workplace conditions 1.5 The appropriate path for the movement of loads in the work area is inspected and determined 1.6 Appropriate ***communication methods*** are identified with ***associated personnel***
2. Conduct routine checks	2.1 Crane is visually checked for any damage or defects 2.2 ***Crane*** is accessed in a safe manner 2.3 All ***signage and labels*** are visible and legible according to the ***appropriate standard*** 2.4 Routine pre-operational crane checks are carried out according to ***procedures*** 2.5 All controls are located and identified 2.6 Crane ***service logbook*** is checked for compliance 2.7 Crane is started according to ***procedures*** and checked for any abnormal noises 2.8 All ***crane safety devices*** are tested according to ***procedures*** 2.9 Pos-start operational checks are carried out according to ***procedures*** 2.10 All ***communication equipment*** is checked for serviceability 2.11 All damage and defects are reported and recorded according to ***procedures***, and appropriate action is taken
3. Set up crane	3.1 ***Ground suitability*** is checked 3.2 ***Crane*** is driven to the work area according to ***procedures***

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	3.3 ***Crane*** is positioned for work application and ***stability*** according to ***procedures*** 3.4 Appropriate ***crane configuration*** for work task is determined according to ***procedures*** (where applicable) 3.5 Boom/jib and counterweight configuration data is input into the crane computer (where applicable) 3.6 Appropriate ***hazard prevention/control measures*** are applied to the work area according to ***procedures*** 3.7 All ***communications equipment*** is tested for functionality
4. Transfer load	4.1 Lifts are determined within the capacity of the crane 4.2 Boom/jib and hoist block is positioned over load following directions from ***associated personnel*** 4.3 ***Test lift*** is carried out according to ***procedures*** 4.4 Loads are transferred using all ***relevant crane movements*** according to ***procedures*** and the ***appropriate standard*** 4.5 All required ***communication signals*** are correctly interpreted according to ***procedures*** and the ***appropriate standard*** 4.6 ***Crane*** is operated according to ***procedures*** 4.7 Load movement is monitored constantly ensuring safety to personnel and load, and crane stability 4.8 ***Unplanned and/or unsafe*** situations are responded to in line with ***procedures***
5. Mobile load	5.1 Suitability of ***planned route*** is checked for the crane according to ***procedures*** 5.2 ***Crane*** is configured to mobile load according to procedures 5.3 Load is moved using ***best mobile practice*** according to the appropriate standard
6 Shut down and secure crane	6.1 ***Crane*** boom/jib and equipment is stowed and secured, where appropriate, according to ***procedures*** and the ***appropriate standard*** 6.2 Relevant motion locks and brakes are applied (where applicable) 6.3 Outriggers/stabilisers are stowed and secured according to ***procedures*** (where applicable) 6.4 Crane is ***shut down*** according to procedures 6.5 Routine post-operational crane checks are carried

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	out according to ***procedures*** 6.6 Plates or packing are stowed and secured (where applicable) 6.7 All damage and defects are recorded and reported according to ***procedures***, and appropriate action is taken

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This describes the essential skills and knowledge and their level, required for this unit.
Required skills:
• Accurately record and maintain information relating to crane operations • Use communication techniques in the workplace including whistles, hand signals and use of two-way radios • Use communication skills at a level sufficient to communicate with other site personnel • Assessment of ground conditions to confirm that the site is suitable (e.g. firm, level and safe) to operate crane • Operate crane including all functions to their maximum extension in the lifting and moving of loads to the safe working rated capacity in conjunction with other associated personnel • Mobile loads using best mobile practice • Apply risk assessment and hazard control strategies, including hierarchy of control as applied to the positioning and safe operation of the crane (particular awareness of the risks associated with overhead powerlines/electrical cables, ground conditions, crane tipping and demolition sites) • Use and interpret crane manufacturer's specifications and data, including load charts to enable the crane to be configured for the load • Verify problems and equipment faults and demonstrate appropriate response procedures
Required knowledge:
• Appropriate mathematical procedures for estimation and measurement of loads • Commonwealth, state or territory OH&S legislation, standards and codes of practice relevant to the full range of processes for the crane class • Ability to read and comprehend manufacturer's instructions, procedures and safety signs • Understanding of crane characteristics and capabilities (including use of load charts) to allow the configuration of the crane to suit the range of loads

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REQUIRED SKILLS AND KNOWLEDGE
• Understanding of the hierarchy of hazard identification and control • Organisational and workplace standards, requirements, policies and procedures for conducting operations for the crane class • Procedures for the recording, reporting and maintenance of workplace records and information • Typical routine problems encountered in the operation of the crane and equipment and adjustments required for correction

Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the assessment guidelines for the Training Package.	
Overview of assessment	Successful assessment of this unit meets the competency requirement of the National Standard for Licensing Persons Performing High Risk Work. State/territory OH&S regulators have mandated the use of Assessment Instruments and Instructions for Assessment for this unit which have been endorsed by the national body responsible for OH&S matters.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	• Compliance with OH&S licensing legislation. • Communicate and work safely with others in the work area. • Risk assessment and management procedures (particular awareness of the risks associated with overhead powerlines/electrical cables, ground conditions, crane tipping, other vehicles and personnel). • Operation of a non-slewing mobile crane including all functions to their maximum extension in the lifting and moving of loads to the safe working rated capacity of non-slewing mobile cranes (over 3t capacity) in conjunction with other associated personnel. • Appropriate mathematical procedures for estimation of loads.
Context of and specific	• Assessment of the safe and effective application of knowledge and skill to workplace tasks

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EVIDENCE GUIDE	

resources for assessment	(performance) must be undertaken using the endorsed Assessment Instrument.
	• Assessment of performance must be undertaken either in the workplace or in a realistically simulated workplace setting.
	• Assessors must ensure that the assessment in the workplace is organised to ensure that all the required equipment and materials and a suitable working area is made available to suit the assessment and the workplace.
	• Assessment must occur under standard and authorised work practices, safety requirements and environmental constraints.
	• Assessment is to comply with relevant appropriate standard requirements.
	• Applicants must have access to:
	  • Personal Protective Equipment (PPE) for the purpose of the Performance Assessment
	  • appropriate non-slewing crane (greater than 3 tonnes) and associated equipment in safe condition
	  • suitable loads as specified by endorsed assessment instrument
	  • communication equipment (e.g. two-way radios, whistles, etc.)
	  • other associated personnel to sling and direct the loads.

Method of assessment	• Assessment must be conducted using the endorsed Assessment Instruments. These Instruments provide advice on their application. • The use of '**simulators**' in the assessment of this unit of competency is **not acceptable**. • Assessment may be in conjunction with the assessment of other units of competency. • Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge. • Assessment must confirm a reasonable inference that competency is not only able to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.
Guidance information for	• Further information about endorsed Assessment Instruments may be obtained from state/territory

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EVIDENCE GUIDE	
assessment	OH&S regulators.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below.	
Hazards	May include but not limited to: • ground stability (e.g. ground condition, recently filled trenches, slopes) • overhead hazards (e.g. powerlines, service pipes) • insufficient lighting • traffic (e.g. pedestrians, vehicles, other plant) • environmental conditions (e.g. wind, lightning, storms, etc.) • other specific hazards (e.g. dangerous materials)
Hazard control measures	Refers to the systematic process of eliminating or reducing the risk to personnel and property through the application of controls It includes the application of the hierarchy of control, the six-step preference of control measures to manage and control risk: 1 elimination 2 substitution 3 isolation 4 engineering control measures 5 using safe work practices 6 personal protective equipment
Appropriate standards	May include but not limited to: • codes of practice • legislation • Australian standards • manufacturer's specifications • industry standards (where applicable)

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RANGE STATEMENT	
Associated personnel	May include but not limited to: • doggers • riggers
Appropriate	May include but not limited to: • crane capabilities • environmental conditions (e.g. wind, lightning, storms, etc.)
Crane	May include: • a crane (greater than 3 tonnes capacity) which meets the requirements of AS1418 • articulated type mobile cranes • locomotive cranes Does not include vehicle tow truck operations
Communication method	May include but not limited to: • verbal and non-verbal language • written instructions • signage • hand signals • listening • questioning to confirm understanding • appropriate worksite protocol
Signage and labels	May include but not limited to: • crane data plates/labels • load charts • crane decals • control labels
Procedures	May include but not limited to: • manufacturer's guidelines (instructions, specifications, operators manual or checklists) • industry operating procedures • workplace procedures (work instructions, operating procedures, checklists)
Controls	May include but not limited to: • luffing levers • hoisting and lowering levers • slewing levers including brake

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RANGE STATEMENT	
	• boom extension levers (where fitted)
Service logbook	May include but not limited to: • any logbook • service book • history record system where the service and maintenance history is kept
Crane safety devices	May include but not limited to: • horns/sirens • audible and visual reversing devices • operator restraint devices • lights
Communication equipment	May include but not limited to: • fixed channel two-way radios • whistles • bells • buzzers NB: where radio communication equipment is used the transmitting frequencies of the equipment must be selected to prevent interference to or from other radio equipment being used in the vicinity of the crane
Ground suitability	May include but not limited to: • rough uneven ground • backfilled ground • soft soils • hard compacted soil • rock • bitumen • concrete
Stability	May include but not limited to: • deploying outriggers • establishing correct size plates or packing • correctly positioning plates or packing
Crane configuration	May include but not be limited to: • boom/jib • fly-jib • counterweights

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RANGE STATEMENT	
Hazard prevention/control measures	May include but not limited to: • safety tags on electrical switches/isolators • insulated powerlines • safety observer used inside exclusion zone • disconnected power • traffic barricades and control/s • pedestrian controls • trench covers • movement of obstructions • personal protective equipment • adequate illumination
Test lift	The load is lifted just clear of the lifting plane to allow for checks to be safely made in consultation with associated personnel to ensure that: • near capacity loads do not overload the crane • loads of unusual shape or weight distribution are correctly slung • load measuring equipment can be used to verify the calculated weight of the load • all crane equipment is functioning properly • adjustments to the slinging can be made in a safe manner
Relevant crane movements	May include but not limited to: • telescope in and out • boom/jib up and down • articulating (as applicable) • raise and lower hoist (as applicable)
Communication signals	May include but not limited to: • stop - hand • stop - whistle • hoist up - hand • hoist up - whistle • hoist down - hand • hoist down - whistle • luff boom down - hand • luff boom down - whistle • luff boom up - hand • luff boom up - whistle

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RANGE STATEMENT	
	• telescope out - hand • telescope out - whistle • telescope in - hand • telescope in - whistle • slew/articulate right - hand • slew/articulate right - whistle • slew/articulate left - hand • slew/articulate left - whistle
Unplanned and/or unsafe situations	May include but not limited to: • failure/loss of control (e.g. brakes and steering) • failure of equipment (e.g. hydraulic system) • environmental conditions (e.g. wind, lightning, storms, etc.)
Planned route	May include but not limited to: • unusual or difficult terrains • obstacles or obstruction
Best mobile practice	May include but not limited to: • minimum speed • gentle acceleration and braking (to minimise load swing) • minimum boom/jib length • carrying the load near to the ground surface • use of handheld taglines
Shut down	May include but not limited to: • retracting boom/jib/fly (where applicable) • retracting hoist rope and hook block • idling engine to stabilise temperature • retracting outriggers/stabilisers (where applicable) • turning off engine

Unit Sector(s)

Not Applicable

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TLILIC3008A Licence to operate a slewing mobile crane (up to 20 tonnes)

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor	This unit specifies the outcomes required to operate a slewing mobile crane (up to 20 tonnes) for licensing purposes. It encompasses the requirement for non-slewing mobile crane licence and the vehicle loading crane licence.

Application of the Unit

Application of the Unit	This unit requires the operator to plan the work, conduct routine checks, set up crane, transfer loads, mobile loads and shut down and secure the crane. This unit is based on the requirements of the National Standard for Licensing Persons Performing High Risk Work. This unit in its current form meets state and territory licensing requirements. Any alteration will result in a unit which is not acceptable to regulators for the purpose of licensing.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

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Employability Skills Information

Employability Skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency	*Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.*

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan work	1.1 Potential workplace ***hazards*** are identified 1.2 ***Hazard prevention/control measures*** are identified consistent with ***appropriate standards*** to ensure the safety of personnel and equipment 1.3 The weight of the load is identified and estimated in consultation with ***associated personnel*** 1.4 ***Crane*** is ***appropriate*** to the load/s and workplace conditions 1.5 Appropriate path for the movement of loads in the work area is inspected and determined 1.6 Appropriate ***communication methods*** are identified with ***associated personnel***
2. Conduct routine checks	2.1 ***Crane*** is visually checked for any damage or defects 2.2 ***Crane*** is accessed in a safe manner 2.3 All ***signage and labels*** are visible and legible according to the ***appropriate standard*** 2.4 Routine pre-operational crane checks are carried out according to ***procedures*** 2.5 All ***controls*** are located and identified 2.6 Crane ***service logbook*** is checked for compliance 2.7 ***Crane*** is started according to ***procedures*** and checked for any abnormal noise 2.8 All ***crane safety devices*** are tested according to ***procedures*** 2.9 Post-start operational checks are carried out according to ***procedures*** 2.10 All ***communication equipment*** is checked for serviceability 2.11 All damage and defects are reported and recorded according to ***procedures***, and appropriate action is taken
3. Set up crane	3.1 ***Ground suitability*** is checked 3.2 ***Crane*** is driven to the work area according to ***procedures*** 3.3 ***Crane*** is positioned for work application and ***stability*** according to ***procedures*** 3.4 Appropriate ***crane configuration*** for work task is determined according to ***procedures*** (where applicable) 3.5 Boom/jib and counterweight configuration data is input

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ELEMENT	PERFORMANCE CRITERIA
	into the crane computer (as required) 3.6 Appropriate ***hazard prevention/control measures*** are applied to the work area according to ***procedures*** 3.7 All ***communications equipment*** is tested for functionality
4. Transfer load	4.1 Lifts are determined within the capacity of the crane 4.2 Boom/jib and hoist block is positioned over load following directions from ***associated personnel*** 4.3 ***Test lift*** is carried out according to ***procedures*** 4.4 Loads are transferred using all ***relevant crane movements*** according to ***procedures*** and the ***appropriate standard*** 4.5 All required ***communication signals*** are correctly interpreted according to ***procedures*** and the ***appropriate standard*** 4.6 ***Crane*** is operated according to ***procedures*** 4.7 Load movement is monitored constantly ensuring safety to personnel and load, and crane stability 4.8 ***Unplanned and/or unsafe*** situations are responded to in line with ***procedures***
5. Mobile load	5.1 Suitability of ***planned route*** is checked for the crane according to ***procedures*** 5.2 ***Crane*** is configured to mobile load according to ***procedures*** 5.3 Load is moved using ***best mobile practice*** according to the ***appropriate standard***
6. Shut down and secure crane	6.1 ***Crane*** boom/jib and equipment are stowed and secured where appropriate according to ***procedures*** and the ***appropriate standard*** 6.2 Relevant motion locks and brakes are applied (where applicable) 6.3 Outriggers/stabilisers are stowed and secured according to ***procedures*** 6.4 Crane is ***shut down*** according to ***procedures*** 6.5 Plates or packing are stowed and secured 6.6 Routine post-operational crane checks are carried out according to ***procedures*** 6.7 All damage and defects are reported and recorded according to ***procedures***, and appropriate action is taken

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This describes the essential skills and knowledge and their level required for this unit.
Required skills:
• Accurately record and maintain information relating to crane operations • Use communication techniques in the workplace including whistles, hand signals and use of two-way radios • Use interpersonal communication skills at a level sufficient to communicate with other site personnel • Load data into crane computer (where fitted) and check operation to accurately reflect the crane configuration • Operate a slewing mobile crane (up to 20t capacity) for the lifting and moving of loads to the safe working rated capacity in conjunction with other associated personnel • Apply risk assessment and hazard control strategies, including hierarchy of control as applied to the positioning and safe operation of the crane (particular awareness of the risks associated with overhead powerlines/electrical cables, wind, erection, pack up and crane stability) • Use and interpret crane manufacturer's specifications and data, including load charts, to enable the crane to be configured for the load • Verify problems and equipment faults and demonstrate appropriate response procedures
Required knowledge:
• Appropriate mathematical procedures for estimation and measurement of loads • Commonwealth, state or territory OH&S legislation, standards and codes of practice relevant to the full range of processes for the crane class • Level of literacy to be able to read and comprehend manufacturer's instructions, procedures and safety signs • Mobile slewing crane characteristics and capabilities to allow the configuration of the crane to suit the range of loads • Mobile slewing crane operating techniques • Understanding of the hierarchy of hazard identification and control • Organisational and workplace standards, requirements, policies and procedures for conducting operations for the crane class • Procedures for the recording, reporting and maintenance of workplace records and information • Rated capacity and working load limits (including use of crane load charts) • Typical routine problems encountered in the process and with equipment and

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REQUIRED SKILLS AND KNOWLEDGE
adjustments required for correction

Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the assessment guidelines for the Training Package.	
Overview of assessment	• Successful assessment of this unit meets the competency requirement of the National Standard for Licensing Persons Performing High Risk Work. • State/territory OH&S regulators have mandated the use of Assessment Instruments and Instructions for Assessment for this unit which have been endorsed by the national body responsible for OH&S matters.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	• Compliance with OH&S licensing legislation. • Communicate and work safely with others in the work area. • Risk assessment and management procedures (particular awareness of the risks associated with overhead powerlines/electrical cables, ground conditions, crane tipping and demolition sites). • Complete the pre-operational check, positioning, stabilising, set up, operation, post-operational checks of a mobile crane including all functions to their maximum extension in the lifting and moving of loads to the safe working rated capacity of the mobile crane up to 20 tonne capacity in conjunction with other associated personnel. • Appropriate mathematical procedures for estimation of loads.
Context of and specific resources for assessment	• Assessment of the safe and effective application of knowledge and skill to workplace tasks (performance) must be undertaken using the endorsed Assessment Instrument. • Assessment of performance must be undertaken either in the workplace or in a realistically simulated workplace setting. • Assessors must ensure that the assessment in the

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EVIDENCE GUIDE	

	workplace is organised to ensure that all the required equipment and materials and a suitable working area is made available to suit the assessment and the workplace.
	• Assessment must occur under standard and authorised work practices, safety requirements and environmental constraints.
	• Assessment is to comply with relevant appropriate standard requirements.
	• Applicants must have access to:
	  • Personal Protective Equipment (PPE) for the purpose of the Performance Assessment
	  • appropriate slewing mobile crane (up to 20 tonne) and associated equipment in safe condition
	  • suitable loads as specified by the endorsed Assessment Instrument
	  • communication equipment (e.g. two-way radios, whistles, etc.)
	  • other associated personnel to sling and direct the loads

Method of assessment	• Assessment must be conducted using the endorsed Assessment Instruments. These Instruments provide advice on their application. • Assessment may be in conjunction with the assessment of other units of competency. • The use of '**simulators**' in the assessment of this unit of competency is **not acceptable**. • Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge. • Assessment must confirm a reasonable inference that competency is not only able to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.
Guidance information for assessment	Further information about endorsed Assessment Instruments may be obtained from state/territory OH&S regulators.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below.	
Hazards	May include but not limited to: • ground stability (e.g. ground condition, recently filled trenches, slopes) • overhead hazards (e.g. powerlines, service pipes) • traffic (e.g. pedestrians, vehicles, other plant) • insufficient lighting • environmental conditions (e.g. wind, lightning, storms, etc.) • other specific hazards (e.g. dangerous materials)
Hazard control measures	Refers to the systematic process of eliminating or reducing the risk to personnel and property through the application of controls It includes the application of the hierarchy of control, the six-step preference of control measures to manage and control risk: 1 elimination 2 substitution 3 isolation 4 engineering control measures 5 using safe work practices 6 personal protective equipment
Appropriate standard	May include but not limited to: • codes of practice (mobile crane) • legislation • Australian standard • manufacturer's specifications • industry standards (where applicable)
Associated personnel	May include but not limited to: • riggers • doggers
Appropriate	May include but not limited to: • crane capabilities

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RANGE STATEMENT	
	• environmental conditions (e.g. wind, lightning, storms, etc.)
Crane	May include a boom or jib, which is capable of being slewed (up to 20 tonnes capacity) The slewing mobile crane up to 20 tonnes classification encompasses the requirements for the non-slewing mobile crane classification and the vehicle loading crane classification NB: This excludes front-end loader, backhoe, excavator or like equipment when configured for crane operation
Communication method	May include but not limited to: • verbal and non-verbal language • written instructions • signage • hand signals • listening • questioning to confirm understanding • appropriate worksite protocol
Signage and labels	May include but not limited to: • crane data plates/labels • load charts • crane decals • control labels
Procedures	May include but not limited to: • manufacturer's guidelines (instructions, specifications or checklists) • industry operating procedures • workplace procedures (work instructions, operating procedures, checklists)
Controls	May include but not limited to: • luffing levers • hoisting and lowering levers • slewing levers including brake • boom extension levers (where fitted)
Service logbook	May include but not limited to: • any logbook

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RANGE STATEMENT	
	• service book • history record system where the service and maintenance history is kept
Crane safety devices	May include but not limited to: • horns/sirens • audible and visual reversing devices • operator restraint devices • lights
Communication equipment	May include but not limited to: • two-way radios • whistles • bells • buzzers NB: where radio communication equipment is used the transmitting frequencies of the equipment must be selected to prevent interference to or from other radio equipment being used in the vicinity of the crane
Ground suitability	May include but not limited to: • rough uneven ground • backfilled ground • soft soils • hard compacted soil • rock • bitumen • concrete
Stability	May include but not limited to: • deploying outriggers • establishing correct size plates or packing • correctly positioning plates or packing
Crane configuration	May include but not be limited to: • boom/jib • fly-jib • counterweights
Hazard prevention/control measures	May include but not limited to: • safety tags on electrical switches/isolators • insulated powerlines

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RANGE STATEMENT	
	• safety observer used inside exclusion zone • disconnected power • traffic barricades and control • pedestrian barricades • trench covers • movement of obstructions • personal protective equipment • adequate illumination
Test lift	The load is lifted just clear of the lifting plane to allow for checks to be safely made in consultation with associated personnel to ensure that: • near capacity loads do not overload the crane • loads of unusual shape or weight distribution are correctly slung • load measuring equipment can be used to verify the calculated weight of the load • all crane equipment is functioning properly • adjustments to the slinging can be made in a safe manner
Relevant crane movements	May include but not limited to: • telescope in and out • boom/jib up and down • slew boom/jib • operation of outriggers/stabilisers • raise and lower hoist • travel
Communication signals	May include but not limited to: • stop - hand • stop - whistle • hoist up - hand • hoist up - whistle • hoist down - hand • hoist down - whistle • luff boom down - hand • luff boom down - whistle • luff boom up - hand • luff boom up - whistle • telescope out - hand • telescope out - whistle

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RANGE STATEMENT	
	• telescope in - hand • telescope in - whistle • slew left - hand • slew left - whistle • slew right - hand • slew right - whistle • travel - hand
Unplanned and/or unsafe situations	May include but not limited to: • failure/loss of control (e.g. brakes and steering) • failure of equipment (e.g. hydraulic system) • environmental conditions (e.g. wind, lightning, storms, etc.)
Planned route	May include but not limited to: • unusual or difficult terrains • obstacles or obstruction
Best mobile practice	May include but not limited to: • minimum speed • gentle acceleration and braking (to minimise load swing) • minimum boom/jib length • carrying the load near to the ground surface • boom/jib in line with the crane • boom/jib as low as possible • load faces uphill • use of handheld taglines
Shut Down	May include but not limited to: • retracting boom/jib • retracting hoist rope and hook block • positioning/securing boom/jib • retracting outriggers/stabilisers • idling engine to stabilise temperature • turning off engine (where applicable) • removing key from ignition (where applicable) • locking and securing cabin (where applicable)

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Unit Sector(s)

Not Applicable

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TLILIC4009A Licence to operate a slewing mobile crane (up to 60 tonnes)

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor	This unit specifies the outcomes required to operate a slewing mobile crane (up to 60 tonnes) for licensing purposes. It encompasses the requirement for the up to 20 tonnes licence.

Application of the Unit

Application of the Unit	This unit requires the operator to plan the work, conduct routine checks, set up crane, transfer loads, mobile loads and shut down and secure the crane. This unit is based on the requirements of the National Standard for Licensing Persons Performing High Risk Work. This unit in its current form meets state and territory licensing requirements. Any alteration will result in a unit which is not acceptable to regulators for the purpose of licensing.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

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Employability Skills Information

Employability Skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency	*Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.*

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan work	1.1 Potential workplace ***hazards*** are identified 1.2 ***Hazard control measures*** are identified consistent with ***appropriate standards*** to ensure the safety of personnel and equipment 1.3 The weight of the load is identified and estimated in consultation with ***associated personnel*** 1.4 The ***crane*** is ***appropriate*** to the load/s and workplace conditions 1.5 Appropriate paths for the movement of loads in the work area are inspected and determined 1.6 Appropriate ***communication methods*** are identified with ***associated personnel***
2. Conduct routine checks	2.1 ***Crane*** is visually checked for any damage or defects 2.2 ***Crane*** is accessed in a safe manner 2.3 All ***signage and labels*** are visible and legible according to the ***appropriate standard*** 2.4 Routine pre-operational crane checks are carried out according to ***procedures*** 2.5 All ***controls*** are located and identified 2.6 Crane ***service logbook*** is checked for compliance 2.7 ***Crane*** is started according to ***procedures*** and checked for any abnormal noises 2.8 All ***crane safety devices*** are tested according to ***procedures*** 2.9 Post-start operational checks are carried out according to ***procedures*** 2.10 All ***communication equipment*** is checked for serviceability 2.11 All damage and defects are reported and recorded according to ***procedures***, and appropriate action is taken
3. Set up cane	3.1 ***Ground suitability*** is checked 3.2 ***Crane*** is driven to the work area according to ***procedures*** 3.3 ***Crane*** is positioned for work application and ***stability*** according to ***procedures*** 3.4 Appropriate ***crane configuration*** for work task is determined according to ***procedures*** (where applicable) 3.5 Boom/jib and counterweight configuration data is input into the crane computer (as required)

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ELEMENT	PERFORMANCE CRITERIA
	3.6 Appropriate ***hazard prevention/control measures*** are applied to the work area according to ***procedures*** 3.7 All ***communications equipment*** is tested for functionality
4. Transfer load	4.1 Lifts are determined within the capacity of the crane 4.2 Boom/jib and hoist block is positioned over load following directions from ***associated personnel*** 4.3 ***Test lift*** is carried out according to ***procedures*** 4.4 Loads are transferred using all ***relevant crane movements*** according to ***procedures*** and the ***appropriate standard*** 4.5 All required ***communication signals*** are correctly interpreted according to ***procedures*** and the ***appropriate standard*** 4.6 ***Crane*** is operated according to ***procedures*** 4.7 Load movement is monitored constantly ensuring safety to personnel and load, and crane stability 4.8 ***Unplanned and/or unsafe*** situations are responded to in line with ***procedures***
5. Mobile load	5.1 Suitability of ***planned route*** is checked for the crane according to ***procedures*** 5.2 ***Crane*** is configured to mobile load according to ***procedures*** 5.3 Load is moved using ***best mobile practice*** according to the ***appropriate standard***
6. Shut down and secure crane	6.1 ***Crane*** boom/jib and equipment are stowed and secured where appropriate according to ***procedures*** and the ***appropriate standard*** 6.2 Relevant motion locks and brakes are applied (where applicable) 6.3 Outriggers/stabilisers are stowed and secured according to ***procedures*** 6.4 Crane is ***shut down*** according to ***procedures*** 6.5 Plates or packing are stowed and secured 6.6 Routine post-operational crane checks are carried out according to ***procedures*** 6.7 All damage and defects are reported and recorded according to ***procedures***, and appropriate action is taken

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This describes the essential skills and knowledge and their level required for this unit.
Required skills:
• Accurately record and maintain information relating to crane operations • Use communication techniques in the workplace including whistles, hand signals and use of two-way radios • Use interpersonal communication skills at a level sufficient to communicate with other site personnel • Load data into crane computer (where fitted) and check operation to accurately reflect the crane configuration • Operate a slewing mobile crane (21t up to 60t capacity) for the lifting and moving of loads to the safe working rated capacity in conjunction with other associated personnel • Apply risk assessment and hazard control strategies, including hierarchy of control as applied to the positioning and safe operation of the crane (particular awareness of the risks associated with overhead powerlines/electrical cables, wind, erection, pack up and crane stability) • Use and interpret crane manufacturer's specifications and data, including load charts, to enable the crane to be configured for the load • Verify problems and equipment faults and demonstrate appropriate response procedures
Required knowledge:
• Appropriate mathematical procedures for estimation and measurement of loads • Commonwealth, state or territory OH&S legislation, standards and codes of practice relevant to the full range of processes for the crane class • Level of literacy to be able to read and comprehend manufacturer's instructions, procedures and safety signs • Mobile slewing crane characteristics and capabilities to allow the configuration of the crane to suit the range of loads • Mobile slewing crane operating techniques • Understanding of the hierarchy of hazard identification and control • Organisational and workplace standards, requirements, policies and procedures for conducting operations for the crane class • Procedures for the recording, reporting and maintenance of workplace records and information • Rated capacity and working load limits (including use of crane load charts) • Typical routine problems encountered in the process and with equipment and adjustments required for correction

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the assessment guidelines for the Training Package.	
Overview of assessment	• Successful assessment of this unit meets the competency requirement of the National Standard for Licensing Persons Performing High Risk Work. • State/territory OH&S regulators have mandated the use of Assessment Instruments and Instructions for Assessment for this unit which have been endorsed by the national body responsible for OH&S matters.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	• Compliance with OH&S licensing legislation. • Effectively communicate and work safely with others in the work area. • Risk assessment and management procedures (particular awareness of the risks associated with overhead powerlines/electrical cables, ground conditions, crane tipping and demolition sites). • Effectively complete the pre-operational check, positioning, stabilising, set up, operation, post-operational checks of a mobile crane including all functions to their maximum extension in the lifting and moving of loads to the safe working rated capacity of the mobile crane up to 60 tonne capacity in conjunction with other associated personnel. • Appropriate mathematical procedures for estimation of loads.
Context of and specific resources for assessment	• Assessment of the safe and effective application of knowledge and skill to workplace tasks (performance) must be undertaken using the endorsed Assessment Instrument. • Assessment of performance must be undertaken either in the workplace or in a realistically simulated workplace setting. • Assessors must ensure that the assessment in the workplace is organised to ensure that all the required equipment and materials and a suitable

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EVIDENCE GUIDE	

	working area is made available to suit the assessment and the workplace.
	• Assessment must occur under standard and authorised work practices, safety requirements and environmental constraints.
	• Assessment is to comply with relevant appropriate standard requirements.
	• Applicants must have access to:
	  • Personal Protective Equipment (PPE) for the purpose of the Performance Assessment.
	  • appropriate slewing mobile crane (21tonne up to 60 tonne) and associated equipment in safe condition
	  • suitable loads as specified by the endorsed Assessment Instrument
	  • communication equipment (e.g. two-way radios, whistles, etc.)
	  • other associated personnel to sling and direct the loads.

Method of assessment	• Assessment must be conducted using the endorsed Assessment Instruments. These Instruments provide advice on their application. • The use of '**simulators**' in the assessment of this unit of competency is **not acceptable**. • Assessment may be in conjunction with the assessment of other units of competency. • Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge. • Assessment must confirm a reasonable inference that competency is not only able to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.
Guidance information for assessment	• Further information about endorsed Assessment Instruments may be obtained from State/territory OH&S regulators.

Range Statement

RANGE STATEMENT

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RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below.	
Hazards	May include but not limited to: • ground stability (e.g. ground condition, recently filled trenches, slopes) • overhead hazards (e.g. powerlines, service pipes) • traffic (e.g. pedestrians, vehicles, other plant) • insufficient lighting • environmental conditions (e.g. wind, lightning, storms, etc.) • other specific hazards (e.g. dangerous materials)
Hazard control measures	Refers to the systematic process of eliminating or reducing the risk to personnel and property through the application of controls It includes the application of the hierarchy of control, the six-step preference of control measures to manage and control risk: 1 elimination 2 substitution 3 isolation 4 engineering control measures 5 using safe work practices 6 personal protective equipment
Appropriate standard	May include: • codes of practice (mobile crane) • legislation • Australian standards • manufacturer's specifications • industry standards (where applicable)
Associated personnel	May include but not limited to: • riggers • doggers
Appropriate	May include but not limited to: • crane capabilities • environmental conditions (e.g. wind, lightning,

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RANGE STATEMENT	
	storms, etc.)
Crane	May include a boom or jib, which is capable of being slewed (up to 60 tonnes capacity) The slewing mobile crane up to 60 tonnes classification encompasses the requirements for the up to 20 tonnes classification
Communication method	May include but not limited to: • verbal and non-verbal language • written instructions • signage • hand signals • listening • questioning to confirm understanding • appropriate worksite protocol
Signage and labels	May include but not limited to: • crane data plates/labels • load charts • crane decals • control labels
Procedures	May include but not limited to: • manufacturer's guidelines (instructions, specifications or checklists) • industry operating procedures • workplace procedures (work instructions, operating procedures, checklists)
Controls	May include but not limited to: • luffing levers • hoisting and lowering levers • slewing levers including brake • boom extension levers (where fitted)
Service logbook	May include but not limited to: • any logbook • service book • history record system where the service and maintenance history is kept
Crane safety devices	May include but not limited to:

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RANGE STATEMENT	
	• horns/sirens • audible and visual reversing devices • operator restraint devices • lights
Communication equipment	May include but not limited to: • fixed channel two-way radios • whistles • bells • buzzers NB: where radio communication equipment is used the transmitting frequencies of the equipment must be selected to prevent interference to or from other radio equipment being used in the vicinity of the crane
Ground suitability	May include but not limited to: • rough uneven ground • backfilled ground • soft soils • hard compacted soil • rock • bitumen • concrete
Stability	May include but not limited to: • deploying outriggers • establishing correct size plates or packing • correctly positioning plates or packing
Crane configuration	May include but not be limited to: • boom/jib • fly-jib • counterweights
Hazard prevention/control measures	May include but not limited to: • safety tags on electrical switches/isolators • powerlines insulated • safety observer used inside exclusion zone • power disconnected • traffic barricades and control • pedestrian barricades

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RANGE STATEMENT	
	• trench covers • movement of obstructions • personal protective equipment • adequate illumination
Test lift	The load is lifted just clear of the lifting plane to allow for checks to be safely made in consultation with associated personnel to ensure that: • near capacity loads do not overload the crane • loads of unusual shape or weight distribution are correctly slung • load measuring equipment can be used to verify the calculated weight of the load • all crane equipment is functioning properly • adjustments to the slinging can be made in a safe manner
Relevant crane movements	May include but not limited to: • telescope in and out • boom/jib up and down • slew boom/jib • operation of outriggers/stabilisers • raise and lower hoist • travel
Communication signals	May include but not limited to: • stop - hand • stop - whistle • hoist up - hand • hoist up - whistle • hoist down - hand • hoist down - whistle • luff boom down - hand • luff boom down - whistle • luff boom up - hand • luff boom up - whistle • telescope out - hand • telescope out - whistle • telescope in - hand • telescope in - whistle • slew left - hand • slew left - whistle

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RANGE STATEMENT	
	• slew right - hand • slew right - whistle • travel - hand
Unplanned and/or unsafe situations	May include but not limited to: • failure/loss of control (e.g. brakes and steering) • failure of equipment (e.g. hydraulic system) • environmental conditions (e.g. wind, lightning, storms, etc.)
Planned route	May include but not limited to: • unusual or difficult terrains • obstacles or obstructions
Best mobile practice	May include but not limited to: • minimum speed • gentle acceleration and braking (to minimise load swing) • minimum boom/jib length • carrying the load near to the ground surface • boom/jib in line with the crane • boom/jib as low as possible • load faces uphill • use of handheld taglines
Shut down	May include but not limited to: • retracting boom/jib • retracting hoist rope and hook block • positioning/securing boom/jib • retracting outriggers/stabilisers • idling engine to stabilise temperature • turning off engine (where applicable) • removing key from ignition (where applicable) • locking and securing cabin (where applicable)

Unit Sector(s)

Not Applicable

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TLILIC4010A Licence to operate a slewing mobile crane (up to 100 tonnes)

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor	This unit specifies the outcomes required to operate a slewing mobile crane (up to 100 tonnes) for licensing purposes. It encompasses the requirement for the up to 60 tonnes licence.

Application of the Unit

Application of the Unit	This unit requires the operator to plan the work, conduct routine checks, set up crane, transfer loads, mobile loads and shut down and secure the crane. This unit is based on the requirements of the National Standard for Licensing Persons Performing High Risk Work. This unit in its current form meets state and territory licensing requirements. Any alteration will result in a unit which is not acceptable to regulators for the purpose of licensing.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

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Employability Skills Information

Employability Skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency	*Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.*

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan work	1.1 Potential workplace ***hazards*** are identified 1.2 ***Hazard control measures*** are identified consistent with ***appropriate standards*** to ensure the safety of personnel and equipment 1.3 The weight of the load is identified and estimated in consultation with ***associated personnel*** 1.4 ***Crane*** is ***appropriate*** to the load/s and workplace conditions 1.5 Appropriate paths for the movement of loads in the work area are inspected and determined 1.6 Appropriate ***communication methods*** are identified with ***associated personnel***
2. Conduct routine checks	2.1 ***Crane*** is visually checked for any damage or defects 2.2 ***Crane*** is accessed in a safe manner 2.3 All ***signage and labels*** are visible and legible according to the ***appropriate standard*** 2.4 Routine pre-operational crane checks are carried out according to ***procedures*** 2.5 All ***controls*** are located and identified 2.6 Crane ***service logbook*** is checked for compliance 2.7 ***Crane*** is started according to ***procedures*** and checked for any abnormal noises 2.8 All ***crane safety devices*** are tested according to ***procedures*** 2.9 Post-start operational checks are carried out according to ***procedures*** 2.10 All ***communication equipment*** is checked for serviceability 2.11 All damage and defects are reported and recorded according to ***procedures***, and appropriate action is taken
3. Set up crane	3.1 ***Ground suitability*** is checked 3.2 ***Crane*** is driven to the work area according to ***procedures*** 3.3 ***Crane*** is positioned for work application and ***stability*** according to ***procedures*** 3.4 Appropriate ***crane configuration*** for work task is determined according to ***procedures*** (where applicable) 3.5 Boom/jib and counterweight configuration data is

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ELEMENT	PERFORMANCE CRITERIA
	input into the crane computer (as required) 3.6 Appropriate ***hazard prevention/control measures*** are applied to the work area according to ***procedures*** 3.7 All ***communications equipment*** is tested for functionality
4. Transfer load	4.1 Lifts are determined within the capacity of the crane 4.2 Boom/jib and hoist block is positioned over load following directions from ***associated personnel*** 4.3 ***Test lift*** is carried out according to ***procedures*** 4.4 Loads are transferred using all ***relevant crane movements*** according to ***procedures*** and the ***appropriate standard*** 4.5 All required ***communication signals*** are correctly interpreted according to ***procedures*** and the ***appropriate standard*** 4.6 ***Crane*** is operated according to ***procedures***. 4.7 Load movement is monitored constantly ensuring safety to personnel and load, and crane stability 4.8 ***Unplanned and/or unsafe*** situations are responded to in line with ***procedures***
5. Mobile load	5.1 Suitability of ***planned route*** is checked for the crane according to ***procedures*** 5.2 ***Crane*** is configured to mobile load according to ***procedures*** 5.3 Load is moved using ***best mobile practice*** according to the ***appropriate standard***
6. Shut down and secure crane	6.1 ***Crane*** boom/jib and equipment are stowed and secured where appropriate according to ***procedures*** and the ***appropriate standard*** 6.2 Relevant motion locks and brakes are applied (where applicable) 6.3 Outriggers/stabilisers are stowed and secured according to ***procedures*** 6.4 Crane is ***shut down*** according to ***procedures*** 6.5 Plates or packing are stowed and secured 6.6 Routine post-operational crane checks are carried out according to ***procedures*** 6.7 All damage and defects are reported and recorded according to ***procedures***, and appropriate action is taken

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This describes the essential skills and knowledge and their level required for this unit.
Required skills:
• Accurately record and maintain information relating to crane operations • Use communication techniques in the workplace including whistles, hand signals and use of two-way radios • Use interpersonal communication skills at a level sufficient to communicate with other site personnel • Load data into crane computer (where fitted) and check operation to accurately reflect the crane configuration • Operate a slewing mobile crane (61t up to 100t capacity) for the lifting and moving of loads to the safe working rated capacity in conjunction with other • Apply risk assessment and hazard control strategies, including hierarchy of control as applied to the positioning and safe operation of the crane (particular awareness of the risks associated with overhead powerlines/electrical cables, wind, erection, pack up and crane stability) • Use and interpret crane manufacturer's specifications and data, including load charts, to enable the crane to be configured for the load • Verify problems and equipment faults and demonstrate appropriate response procedures
Required knowledge:
• Appropriate mathematical procedures for estimation and measurement of loads • Commonwealth, state or territory OH&S legislation, standards and codes of practice relevant to the full range of processes for the crane class • Level of literacy to be able to read and comprehend manufacturer's instructions, procedures and safety signs • Mobile slewing crane characteristics and capabilities to allow the configuration of the crane to suit the range of loads • Mobile slewing crane operating techniques • Understanding of the hierarchy of hazard identification and control • Organisational and workplace standards, requirements, policies and procedures for conducting operations for the crane class • Procedures for the recording, reporting and maintenance of workplace records and information • Rated capacity and working load limits (including use of crane load charts) • Typical routine problems encountered in the process and with equipment and adjustments required for correction

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the assessment guidelines for the Training Package.	
Overview of assessment	• Successful assessment of this unit meets the competency requirement of the National Standard for Licensing Persons Performing High Risk Work. • State/territory OH&S regulators have mandated the use of Assessment Instruments and Instructions for Assessment for this unit which have been endorsed by the national body responsible for OH&S matters.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	• Compliance with OH&S licensing legislation. • Effectively communicate and work safely with others in the work area. • Risk assessment and management procedures (particular awareness of the risks associated with overhead powerlines/electrical cables, ground conditions, crane tipping and demolition sites). • Effectively complete the pre-operational check, positioning, stabilising, set up, operation, post-operational checks of a mobile crane including all functions to their maximum extension in the lifting and moving of loads to the safe working rated capacity of the mobile crane up to 100 tonne capacity in conjunction with associated personnel. • Appropriate mathematical procedures for estimation of loads.
Context of and specific resources for assessment	• Assessment of the safe and effective application of knowledge and skill to workplace tasks (performance) must be undertaken using the endorsed Assessment Instrument. • Assessment of performance must be undertaken either in the workplace or in a realistically simulated workplace setting. • Assessors must ensure that the assessment in the workplace is organised to ensure that all the required equipment and materials and a suitable working area is made available to suit the

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EVIDENCE GUIDE	

	assessment and the workplace.
	• Assessment must occur under standard and authorised work practices, safety requirements and environmental constraints.
	• Assessment is to comply with relevant appropriate standard requirements.
	• Applicants must have access to:
	  • Personal Protective Equipment (PPE) for the purpose of the Performance Assessment
	  • appropriate slewing mobile crane (61 tonne up to 100 tonne) and associated equipment in safe condition
	  • suitable loads as specified by the endorsed assessment instrument
	  • communication equipment (e.g. two-way radios, whistles, etc.)
	  • other associated personnel to sling and direct the loads

Method of assessment	• Assessment must be conducted using the endorsed Assessment Instruments. These Instruments provide advice on their application. • The use of '**simulators**' in the assessment of this unit of competency is **not acceptable**. • Assessment may be in conjunction with the assessment of other units of competency. • Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge. • Assessment must confirm a reasonable inference that competency is not only able to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.
Guidance information for assessment	• Further information about endorsed Assessment Instruments may be obtained from state/territory OH&S regulators.

Range Statement

RANGE STATEMENT

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RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below.	
Hazards	May include: • ground stability (e.g. ground condition, recently filled trenches, slopes) • overhead hazards (e.g. powerlines, service pipes) • traffic (e.g. pedestrians, vehicles, other plant) • insufficient lighting • environmental conditions (e.g. wind, lightning, storms, etc.) • other specific hazards (e.g. dangerous materials)
Hazard control measures	Refers to the systematic process of eliminating or reducing the risk to personnel and property through the application of controls It includes the application of the hierarchy of control, the six-step preference of control measures to manage and control risk: 1 elimination 2 substitution 3 isolation 4 engineering control measures 5 using safe work practices 6 personal protective equipment.
Appropriate standard	Appropriate standards may include: • codes of practice (mobile crane) • legislation • Australian standards • manufacturer's specifications • industry standards (where applicable)
Associated personnel	May include but not limited to: • riggers • doggers
Appropriate	May include but not limited to: • crane capabilities • environmental conditions (e.g. wind, lightning,

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RANGE STATEMENT	
	storms, etc.)
Crane	May include a boom or jib, which is capable of being slewed (up to 100 tonnes capacity) The slewing mobile crane up to 100 tonnes classification encompasses the requirements for the slewing mobile crane up to 60 tonnes classification
Communication method	May include but not limited to: • verbal and non-verbal language • written instructions • signage • hand signals • listening • questioning to confirm understanding • appropriate worksite protocol
Signage and labels	May include but not limited to: • crane data plates/labels • load charts • crane decals • control labels
Procedures	May include but not limited to: • manufacturer's guidelines (instructions, specifications or checklists) • industry operating procedures • workplace procedures (work instructions, operating procedures, checklists)
Controls	May include but not limited to: • luffing levers • hoisting and lowering levers • slewing levers including brake • boom extension levers (where fitted)
Service logbook	May include but not limited to: • any logbook • service book • history record system where the service and maintenance history is kept
Crane safety devices	May include but not limited to:

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RANGE STATEMENT	
	• horns/sirens • audible and visual reversing devices • operator restraint devices • lights
Communication equipment	May include but not limited to: • two-way radios • whistles • bells • buzzers NB: where radio communication equipment is used the transmitting frequencies of the equipment must be selected to prevent interference to or from other radio equipment being used in the vicinity of the crane
Ground suitability	May include but not limited to: • rough uneven ground • backfilled ground • soft soils • hard compacted soil • rock • bitumen • concrete
Stability	May include but not limited to: • deploying outriggers • establishing correct size plates or packing • correctly positioning plates or packing
Crane configuration	May include but not be limited to: • boom/jib • fly-jib • counterweights
Hazard prevention/control measures	May include but not limited to: • safety tags on electrical switches/isolators • insulated powerlines • safety observer used inside exclusion zone • disconnected power • traffic barricades and control • pedestrian barricades

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RANGE STATEMENT	
	• trench covers • movement of obstructions • personal protective equipment • adequate illumination
Test lift	The load is lifted just clear of the lifting plane to allow for checks to be safely made in consultation with associated personnel to ensure that: • near capacity loads do not overload the crane • loads of unusual shape or weight distribution are correctly slung • load measuring equipment can be used to verify the calculated weight of the load • all crane equipment is functioning properly • adjustments to the slinging can be made in a safe manner
Relevant crane movements	May include but not limited to: • telescope in and out • boom/jib up and down • slew boom/jib • operation of outriggers/stabilisers • raise and lower hoist • travel
Communication signals	May include but not limited to: • stop - hand • stop - whistle • hoist up - hand • hoist up - whistle • hoist down - hand • hoist down - whistle • luff boom down - hand • luff boom down - whistle • luff boom up - hand • luff boom up - whistle • telescope out - hand • telescope out - whistle • telescope in - hand • telescope in - whistle • slew left - hand • slew left - whistle

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RANGE STATEMENT	
	• slew right - hand • slew right - whistle • travel - hand
Unplanned and/or unsafe situations	May include but not limited to: • failure/loss of control (e.g. brakes and steering) • failure of equipment (e.g. hydraulic system) • environmental conditions (e.g. wind, lightning, storms, etc.)
Planned route	May include but not limited to: • unusual or difficult terrains • obstacles or obstruction
Best mobile practice	May include: • minimum speed • gentle acceleration and braking (to minimise load swing) • minimum boom/jib length • carrying the load near to the ground surface • boom/jib in line with the crane • boom/jib as low as possible • load faces uphill • use of handheld taglines
Shut down	May include but not limited to: • retracting boom/jib • retracting hoist rope and hook block • positioning/securing boom/jib for transport • retracting outriggers/stabilisers • idling engine to stabilise temperature • turning off engine (where applicable) • removing key from ignition (where applicable) • locking and securing cabin (where applicable) • securing crane for travel

Unit Sector(s)

Not Applicable

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TLILIC4011A Licence to operate a slewing mobile crane (over 100 tonnes)

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor	This unit specifies the outcomes required to operate a slewing mobile crane (over 100 tonnes) for licensing purposes. It encompasses the requirement for the up to 100 tonnes licence.

Application of the Unit

Application of the Unit	This unit requires the operator to plan the work, conduct routine checks, set up crane, transfer loads, mobile loads and shut down and secure the crane. This unit is based on the requirements of the National Standard for Licensing Persons Performing High Risk Work. This unit in its current form meets state and territory licensing requirements. Any alteration will result in a unit, which is not acceptable to regulators for the purpose of licensing.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

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Employability Skills Information

Employability Skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency	*Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.*

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan work	1.1 Potential workplace ***hazards*** are identified 1.2 ***Hazard control measures*** are identified consistent with ***appropriate standards*** to ensure the safety of personnel and equipment 1.3 The weight of the load is identified and estimated in consultation with ***associated personnel*** 1.4 ***Crane*** is ***appropriate*** to the load/s and workplace conditions 1.5 Appropriate paths for the movement of loads in the work area is inspected and determined 1.6 Appropriate ***communication methods*** are identified with ***associated personnel***
2. Conduct routine checks	2.1 ***Crane*** is visually checked for any damage or defects 2.2 ***Crane*** is accessed in a safe manner 2.3 All ***signage and labels*** are visible and legible according to the ***appropriate standard*** 2.4 Routine pre-operational crane checks are carried out according to ***procedures*** 2.5 All ***controls*** are located and identified 2.6 Crane ***service logbook*** is checked for compliance 2.7 ***Crane*** is started according to ***procedures*** and checked for any abnormal noises 2.8 All ***crane safety devices*** are tested according to ***procedures*** 2.9 Post-start operational checks are carried out according to ***procedures*** 2.10 All ***communication equipment*** is checked for serviceability 2.11 All damage and defects are reported and recorded according to ***procedures***, and appropriate action is taken
3. Set up crane	3.1 ***Ground suitability*** is checked 3.2 ***Crane*** is driven to the work area according to ***procedures*** 3.3 ***Crane*** is positioned for work application and ***stability*** according to ***procedures*** 3.4 Appropriate ***crane configuration*** for work task is

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ELEMENT	PERFORMANCE CRITERIA
	determined according to ***procedures*** (where applicable) 3.5 Boom/jib and counterweight configuration data is input into the crane computer (as required) 3.6 Appropriate ***hazard prevention/control measures*** are applied to the work area according to ***procedures*** 3.7 All ***communications equipment*** is tested for functionality
4. Transfer load	4.1 Lifts are determined within the capacity of the crane 4.2 Boom/jib and hoist block is positioned over load following directions from ***associated personnel*** 4.3 ***Test lift*** is carried out according to ***procedures*** 4.4 Loads are transferred using all ***relevant crane movements*** according to ***procedures*** and the ***appropriate standard*** 4.5 All required ***communication signals*** are correctly interpreted according to ***procedures*** and the ***appropriate standard*** 4.6 ***Crane*** is operated according to ***procedures*** 4.7 Load movement is monitored constantly ensuring safety to personnel and load, and crane stability 4.8 ***Unplanned and/or unsafe*** situations are responded to in line with ***procedures***
5. Mobile load	5.1 Suitability of ***planned route*** is checked for the crane according to ***procedures*** 5.2 ***Crane*** is configured to mobile load according to ***procedures*** 5.3 Load is moved using ***best mobile practice*** according to the ***appropriate standard***
6. Shut down and secure crane	6.1 Crane boom/jib and equipment are stowed and secured where appropriate according to ***procedures*** and the ***appropriate standard*** 6.2 Relevant motion locks and brakes are applied (where applicable) 6.3 Outriggers/stabilisers are stowed and secured according to ***procedures*** 6.4 Crane is ***shut down*** according to ***procedures*** 6.5 Plates or packing are stowed and secured 6.6 Routine post-operational crane checks are carried out according to ***procedures*** 6.7 All damage and defects are reported and recorded

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ELEMENT	PERFORMANCE CRITERIA
	according to ***procedures***, and appropriate action is taken

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This describes the essential skills and knowledge and their level required for this unit.
Required skills:
• Accurately record and maintain information relating to crane operations • Use communication techniques in the workplace including whistles, hand signals and use of two-way radios • Use interpersonal communication skills at a level sufficient to communicate with other site personnel • Load data into crane computer (where fitted) and check operation to accurately reflect the crane configuration • Operate a slewing mobile crane (over 100 tonnes capacity) for the lifting and moving of loads to the safe working rated capacity in conjunction with other associated personnel • Apply risk assessment and hazard control strategies, including hierarchy of control as applied to the positioning and safe operation of the crane (particular awareness of the risks associated with overhead powerlines/electrical cables, wind, erection, pack up and crane stability) • Use and interpret crane manufacturer's specifications and data, including load charts, to enable the crane to be configured for the load • Verify problems and equipment faults and demonstrate appropriate response procedures
Required knowledge:
• Appropriate mathematical procedures for estimation and measurement of loads • Commonwealth, state or territory OH&S legislation, standards and codes of practice relevant to the full range of processes for the crane class • Level of literacy to be able to read and comprehend manufacturer's instructions, procedures and safety signs • Mobile slewing crane characteristics and capabilities to allow the configuration of the crane to suit the range of loads • Mobile slewing crane operating techniques • Understanding of the hierarchy of hazard identification and control • Organisational and workplace standards, requirements, policies and procedures for conducting operations for the crane class

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REQUIRED SKILLS AND KNOWLEDGE
• Procedures for the recording, reporting and maintenance of workplace records and information • Rated capacity and working load limits (including use of crane load charts) • Typical routine problems encountered in the process and with equipment and adjustments required for correction

Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the assessment guidelines for the Training Package.	
Overview of assessment	• Successful assessment of this unit meets the competency requirement of the National Standard for Licensing Persons Performing High Risk Work. • State/territory OH&S regulators have mandated the use of Assessment Instruments and Instructions for Assessment for this unit which have been endorsed by the national body responsible for OH&S matters.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	• Compliance with OH&S licensing legislation. • Effectively communicate and work safely with others in the work area. • Risk assessment and management procedures (particular awareness of the risks associated with overhead powerlines/electrical cables, ground conditions, crane tipping and demolition sites). • Effectively complete the pre-operational check, positioning, stabilising, set up, operation, post-operational checks of a mobile crane including all functions to their maximum extension in the lifting and moving of loads to the safe working rated capacity of the mobile crane over 100 tonne capacity in conjunction with other associated personnel. • Appropriate mathematical procedures for estimation of loads.
Context of and specific resources for assessment	• Assessment of the safe and effective application of knowledge and skill to workplace tasks (performance) must be undertaken using the endorsed Assessment Instrument. • Assessment of performance must be undertaken

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EVIDENCE GUIDE	

	either in the workplace or in a realistically simulated workplace setting.
	• Assessors must ensure that the assessment in the workplace is organised to ensure that all the required equipment and materials and a suitable working area is made available to suit the assessment and the workplace.
	• Assessment must occur under standard and authorised work practices, safety requirements and environmental constraints.
	• Assessment is to comply with relevant appropriate standard requirements.
	• Applicants must have access to:
	  • Personal Protective Equipment (PPE) for the purpose of the Performance Assessment
	  • appropriate slewing mobile crane (over 100tonne) and associated equipment in safe condition
	  • suitable loads as specified by the endorsed Assessment Instrument
	  • communication equipment (e.g. two-way radios, whistles, etc.)
	  • other associated personnel to sling and direct the loads.

Method of assessment	• Assessment must be conducted using the endorsed Assessment Instruments. These Instruments provide advice on their application. • The use of '**simulators**' in the assessment of this unit of competency is **not acceptable**. • Assessment may be in conjunction with the assessment of other units of competency. • Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge. • Assessment must confirm a reasonable inference that competency is not only able to be satisfied under the particular circumstances, but is able to be transferred to other circumstances.
Guidance information for assessment	• Further information about endorsed Assessment Instruments may be obtained from state/territory OH&S regulators.

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Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below.	
Hazards	May include but not limited to: • ground stability (e.g. ground condition, recently filled trenches, slopes) • overhead hazards (e.g. powerlines, service pipes) • traffic (e.g. pedestrians, vehicles, other plant) • insufficient lighting • environmental conditions (e.g. wind, lightning, storms, etc.) • other specific hazards (e.g. dangerous materials)
Hazard control measures	Refers to the systematic process of eliminating or reducing the risk to personnel and property through the application of controls It includes the application of the hierarchy of control, the six-step preference of control measures to manage and control risk: 1 elimination 2 substitution 3 isolation 4 engineering control measures 5 using safe work practices 6 personal protective equipment
Appropriate standard	May include: • codes of practice (mobile crane) • legislation • Australian standards • manufacturer's specifications • industry standards (where applicable)
Associated personnel	May include but not limited to: • riggers • doggers
Appropriate	May include but not limited to: • crane capabilities

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RANGE STATEMENT	
	• environmental conditions (e.g. wind, lightning, storms, etc.)
Crane	May include a boom or jib, which is capable of being slewed (over 100 tonnes capacity) The slewing mobile crane over 100 tonnes classification encompasses the requirements for the slewing mobile crane up to 100 tonnes classification
Communication method	May include but not limited to: • verbal and non-verbal language • written instructions • signage • hand signals • listening • questioning to confirm understanding • appropriate worksite protocol
Signage and labels	May include but not limited to: • crane data plates/labels • load charts • crane decals • control labels
Procedures	May include but not limited to: • manufacturer's guidelines (instructions, specifications or checklists) • industry operating procedures • workplace procedures (work instructions, operating procedures, checklists)
Controls	May include but not limited to: • luffing levers • hoisting and lowering levers • slewing levers including brake • boom extension levers (where fitted)
Service logbook	May include but not limited to: • any logbook • service book • history record system where the service and maintenance history is kept

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RANGE STATEMENT	
Crane safety devices	May include but not limited to: • horns/sirens • audible and visual reversing devices • operator restraint devices • lights
Communication equipment	May include but not limited to: • two-way radios • whistles • bells • buzzers NB: where radio communication equipment is used the transmitting frequencies of the equipment must be selected to prevent interference to or from other radio equipment being used in the vicinity of the crane
Ground suitability	May include but not limited to: • rough uneven ground • backfilled ground • soft soils • hard compacted soil • rock • bitumen • concrete
Stability	May include but not limited to: • deploying outriggers • establishing correct size plates or packing • correctly positioning plates or packing
Crane configuration	May include but not be limited to: • boom/jib • fly-jib • counterweights
Hazard prevention/control measures	May include but not limited to: • safety tags on electrical switches/isolators • insulated powerlines • safety observer used inside exclusion zone • disconnected power • traffic barricades and control

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RANGE STATEMENT	
	• pedestrian barricades • trench covers • movement of obstructions • personal protective equipment • adequate illumination
Test lift	The load is lifted just clear of the lifting plane to allow for checks to be safely made in consultation with associated personnel to ensure that: • near capacity loads do not overload the crane • loads of unusual shape or weight distribution are correctly slung • load measuring equipment can be used to verify the calculated weight of the load • all crane equipment is functioning properly • adjustments to the slinging can be made in a safe manner
Relevant crane movements	May include but not limited to: • telescope in and out • jib up and down • slew jib • operation of outriggers/stabilisers • raise and lower hoist • travel
Communication signals	May include but not limited to: • stop - hand • stop - whistle • hoist up - hand • hoist up - whistle • hoist down - hand • hoist down - whistle • luff boom down - hand • luff boom down - whistle • luff boom up - hand • luff boom up - whistle • telescope out - hand • telescope out - whistle • telescope in - hand • telescope in - whistle • slew left - hand

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RANGE STATEMENT	
	• slew left - whistle • slew right - hand • slew right - whistle • travel - hand
Unplanned and/or unsafe situations	May include but not limited to: • failure/loss of control (e.g. brakes and steering) • failure of equipment (e.g. hydraulic system) • environmental conditions (e.g. wind, lightning, storms, etc.)
Planned route	May include but not limited to: • unusual or difficult terrains • obstacles or obstruction
Best mobile practice	May include but not limited to: • minimum speed • gentle acceleration and braking (to minimise load swing) • minimum boom/jib length • carrying the load near to the ground surface • boom/jib in line with the crane • boom/jib as low as possible • load faces uphill • use of handheld taglines
Shut down	May include but not limited to: • retracting boom/jib • retracting hoist rope and hook block • positioning/securing boom/jib for transport • retracting outriggers/stabilisers • idling engine to stabilise temperature • turning off engine (where applicable) • removing key from ignition (where applicable) • locking and securing cabin (where applicable) • securing crane for travel

Unit Sector(s)

Not Applicable

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TLILIC2001A Licence to operate a forklift truck

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor	This unit specifies the outcomes required for the operation of a powered industrial truck equipped with a mast and an elevating load carriage to which is attached a pair of fork arms or other attachment, for licensing purposes. This definition also includes a truck on which the operator is raised with the attachment for order-picking.

Application of the Unit

Application of the Unit	THIS UNIT REQUIRES THE OPERATOR TO BE ABLE PLAN THE WORK, CONDUCT ROUTINE CHECKS ON THE FORKLIFT, SHIFT LOADS IN A SAFE MANNER, AND SHUT DOWN AND SECURE THE EQUIPMENT AFTER THE COMPLETION OF OPERATIONS. This unit is based on the National Standard for Licensing Persons Performing High Risk Work. This unit in its current form meets state and territory licensing requirements. Any alteration will result in a unit which is not acceptable to regulators for the purpose of licensing.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

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Employability Skills Information

Employability Skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Not Applicable

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Elements and Performance Criteria

ELEMENT *Elements describe the essential outcomes of a unit of competency.*	**PERFORMANCE CRITERIA** *Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.*
1. Plan work	1.1 Potential workplace ***hazards*** are identified 1.2 ***Hazard control measures*** are identified consistent with ***appropriate standards*** to ensure the safety of personnel and equipment 1.3 Appropriate ***forklift*** truck is selected according to the load and workplace conditions 1.4 Working area is inspected to determine appropriate path of movement for loads and forklift truck 1.5 ***Communication methods*** are identified according to ***procedures***
2. Conduct routine checks	2.1 Forklift is visually checked for any damage or defects 2.2 All ***signage and labels*** are visible and legible according to the ***appropriate standard*** 2.3 All controls are located and identified 2.4 ***Pre-start operational checks*** are carried out according to ***procedures*** 2.5 ***Forklift*** is started according to ***procedures*** and checked for any abnormal noise 2.6 ***Post-start operational checks*** are carried out according to ***procedures*** 2.7 All forklift functions and safety devices are tested to their maximum according to ***procedures*** 2.8 Defects and damage are reported and recorded according to ***procedures***, and appropriate action is taken
3. Shift load	3.1 The weight of load is assessed to ensure compliance with ***forklift*** truck data plate specifications 3.2 Appropriate ***hazard prevention/control measures*** are implemented and communicated with personnel in the work area 3.3 ***Forklift*** is operated at a safe speed and according to ***procedures*** 3.4 Loads are moved and placed to ensure stability of material and avoidance of hazards

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	3.5 Load movement is monitored constantly ensuring safety to personnel and load, and structural stability 3.6 ***Unplanned and/or unsafe situations*** are responded to in line with ***procedures***
4. Shut down and secure forklift truck	4.1 ***Forklift*** truck is parked to avoid hazards 4.2 Forklift is ***shut down*** according to ***procedures*** 4.3 Routine post-operational forklift checks are carried out according to ***procedures*** 4.4 Forklift is secured to prevent unauthorised access/use 4.5 All defects and damage are reported and recorded according to ***procedures***, and appropriate action is taken

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This describes the essential skills and knowledge and their level required for this unit.
Required skills:
• Accurately interpret information relating to conducting forklift truck operations (e.g. procedures) • Safely conduct forklift truck operations including all functions to the maximum height and load capacity • Identify hazards associated with the operation of the forklift truck, assess risks and put into place effective hazard prevention/control measures for those hazards identified • Use communication skills at a level sufficient to communicate with other site personnel (e.g. receive and interpret work instructions, safety information, emergency procedures) • Drive forklift with load in forward and reverse, maintaining visibility • Verify problems and equipment faults and demonstrate appropriate response procedures
Required knowledge:
• Methodology of determining the weight of a load • Commonwealth, state or territory OH&S legislation, standards relevant to the safe operation for the forklift trucks • Understanding of forklift characteristics and capabilities (including use of load data plates) • Understanding of the hierarchy of hazard identification and control • Organisational and workplace standards, requirements, policies and procedures for

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REQUIRED SKILLS AND KNOWLEDGE
conducting operations for the crane class • Procedures for the recording, reporting and maintenance of workplace records and information • Forklift truck operations and safe operating techniques • Typical routine problems encountered in the operation of the crane and equipment and adjustments required for correction

Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the assessment guidelines for the Training Package.	
Overview of assessment	• Successful assessment of this unit meets the competency requirement of the National Standard for Licensing Persons Performing High Risk Work. • State/territory OH&S regulators have mandated the use of Assessment Instruments and Instructions for Assessment for this unit which have been endorsed by the national body responsible for OH&S matters.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	• Compliance with OH&S licensing legislation. • Communicate and work safely with others in the work area. • Identify hazards associated with the operation of the forklift truck and put in place effective hazard controls for those hazards identified. • Conduct pre-start-up, operational, moving loads and shut down and secure checks of the forklift truck according to procedures. • Operate the forklift truck and move loads safely, including driving and manoeuvring, picking up and placing of loads at various stack heights. • Drive forklift truck with load in forward and reverse, maintaining visibility.
Context of and specific resources for assessment	• Assessment of the safe application of knowledge and skills to workplace tasks (performance) must be undertaken using the endorsed Assessment Instrument.

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EVIDENCE GUIDE	

	• Assessment of performance must be undertaken either in the workplace or in a realistically simulated workplace setting.
	• Assessment must occur under standard and authorised work practices, safety requirements and environmental constraints.
	• Applicants must have access to:
	  • Personal Protective Equipment (PPE) for the purpose of the Performance Assessment
	  • associated equipment appropriate to forklift truck operations
	  • suitable loads as described by the endorsed Assessment Instrument
	  • manufacturers specifications
	  • appropriate forklift truck in a safe condition.

Method of assessment	• Assessment must be conducted using the endorsed Assessment Instrument. These Instruments provide instruction on their application. • The use of '**simulators**' in the assessment of this unit of competency is **not acceptable**. • Assessment may be in conjunction with the assessment of other units of competency. • Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge. • Assessment must confirm a reasonable inference that competency is not only able to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
Guidance information for assessment	• Further information about endorsed Assessment Instruments may be obtained from state/territory OH&S regulators.

Range Statement

RANGE STATEMENT
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below.

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RANGE STATEMENT	
Hazards	May include but not limited to: • ground conditions (e.g. condition of pavement, slopes) • overhead hazards (e.g. powerlines, service pipes) • insufficient lighting • traffic (e.g. pedestrians, vehicles, other plant) • weather (e.g. wind, lightning, rain) • forklift instability (e.g. overloading, poor load placement, irregular loads) • other hazards (e.g. dangerous materials)
Hazard control measures	Refers to the systematic process of eliminating or reducing the risk to personnel and property through the application of controls It includes the application of the hierarchy of control, the six-step preference of control measures to manage and control risk: 1 elimination 2 substitution 3 isolation 4 engineering control measures 5 using safe work practices 6 personal protective equipment
Appropriate standards	May include but not limited to: • legislation • Australian standards • manufacturer's specifications • industry standards (where applicable)
Forklift truck	May include but not be limited to: • counterbalanced • reach trucks • rough terrain • internal combustion petrol, diesel, gas • electric
Communications methods	May include but not limited to: • verbal and non-verbal language • written instructions • signage

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RANGE STATEMENT	
	• hand signals • listening • questioning to confirm understanding • appropriate worksite protocol
Procedures	May include but not limited to: • manufacturer's guidelines (instructions, specifications or checklists) • industry operating procedures • workplace procedures (work instructions, operating procedures, checklists)
Pre-start operational checks	May include but not limited to: • safety devices fitted where appropriate • forklift data plate fitted and interpreted • logbook, handbook or operating manuals available • external visual check including, evidence of damage, leaks, visual evidence of structural weaknesses (including paint separation or stressed welds) is carried out • forklift attachment is checked for security • approved modifications and/or attachments fitted to manufacturer's specifications (e.g. as per forklift or attachment data plate) are identified • checks for adaptations or modifications outside manufacturer's specifications (e.g. not listed on the forklift or attachment data plate) are carried out • maintenance logbook/records checked
Post-start operational checks	May include checks of the forklift truck and equipment after start-up to ensure: • hazard warning systems (for example lights and horns), are functional • attachment movements and control functions are smooth and comply with operating requirements • steering, transmission and brake functions comply with operating requirements
Hazard prevention/control measures	May include but not limited to: • barricades and traffic control • safety tags on electrical switches/isolators

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RANGE STATEMENT	
	• insulated powerlines • safety observer used inside exclusion zone • disconnected power • pedestrian control (barricades, signs, etc.) • excavation safeguards • movement of obstructions • personal protective equipment • adequate illumination
Unplanned and/or unsafe situations	May include but not limited: • failure/loss of control (e.g. brakes and steering) • failure of equipment (e.g. hydraulic system) • environmental condition
Shut down	May include, but is not limited to: • parking in a suitable location away from dangerous areas • fork arms are correctly positioned (tips down, tilted forward, lowered to ground) • appropriate transmission/gear is selected for parking (relevant to transmission type) • hand/parking brake is applied • engine power is turned off • ignition key is removed (if applicable) • LPG gas cylinder valve is shut off (where fitted) • securing equipment against unauthorised operation • securing the site • ensuring access ways are clear • identifying and segregating defective equipment and reporting to authorised personnel • batteries are connected to the charger (if applicable)

Unit Sector(s)

Not Applicable

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CPPCMN2002A Participate in workplace safety arrangements

Modification History

Revised unit
Unit updated and equivalent to PRMCMN201A Participate in workplace safety arrangements.

Unit Descriptor

This unit of competency specifies the outcomes required to ensure own safety and that of others in the workplace. It also covers recognising hazards and following workplace emergency procedures.
The unit is based on Generic Competency A in the National Guidelines for Integrating Occupational Health and Safety Competencies into National Industry Competency Standards (NOHSC:7025 [1998] 2nd edition).

Application of the Unit

This unit of competency supports employees without managerial or supervisory responsibilities. Performance would usually be carried out under routine supervision, within company guidelines.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Follow workplace procedures for hazard identification and risk control.	1.1	***Hazards*** in work area are ***identified*** and reported to ***appropriate personnel*** according to ***workplace procedures*** and ***company requirements***.
		1.2	Workplace procedures and work instructions for controlling risks are followed according to company requirements.
2	Participate in arrangements for managing occupational health and safety (OHS).	2.1	OHS issues are raised with appropriate personnel according to relevant ***OHS legislation***, workplace procedures and company requirements.
		2.2	Opportunities to ***participate*** in OHS management in workplace are identified and used within scope of own role and responsibilities, according to workplace procedures and company requirements.
3	Follow emergency procedures in workplace.	3.1	***Emergency procedures*** are followed within scope of own role and responsibilities according to company requirements.
		3.2	Details of ***hazardous events*** are reported to appropriate personnel according to company requirements.

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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- interpersonal skills to relate to people from diverse backgrounds
- language and literacy skills to:
  - communicate clearly and concisely verbally and in writing
  - communicate OHS information to personnel
  - participate in OHS training
  - read and interpret directions and information, including:
    - emergency responses
    - product instructions
    - safety signs
    - work instructions
  - report potential and existing risks or hazards
- skills to work safely when:
  - identifying hazards and controlling risks
  - using tools, equipment and products

Required knowledge

- common workplace hazards and risk control measures, including:
  - equipment and material use, storage, cleaning and disposal procedures
  - range and meaning of workplace safety signs and symbols
  - site safety plan
  - types and purpose of personal protective equipment (PPE)
  - ways to maintain OHS in emergency situations
- communication channels and procedures to report OHS concerns
- rights and responsibilities of parties in workplace under relevant OHS Acts, regulations and codes of practice

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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	This unit of competency could be assessed by observing the recognition of hazards in the workplace, ensuring own safety and that of others, and following emergency procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the required skills and knowledge specified in this unit. In particular the person should demonstrate the ability to: • follow emergency procedures in emergency situations (note that evidence in this area may be gathered through simulations) • identify hazards and risks in the workplace and report them to appropriate personnel • follow workplace procedures for controlling risks in the workplace.
Context of and specific resources for assessment	Assessment of essential underpinning knowledge may be conducted in an off-site context. It is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include access to: • assessment documentation forms and record books • manuals and relevant documentation, including OHS policies and procedures • PPE commonly used to reduce workplace risk • relevant products, tools, specialist equipment and associated instructions • suitable work area, or simulated workplace environment, that allows for identification of hazards.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Property Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments.

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	This unit could be assessed on its own or in combination with other units relevant to the job function.
Guidance information for assessment	Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Hazards may include:	• blocked access to emergency entry and exit points • electrical and mechanical faults • unsafe manual handling methods • improper use of hazardous materials and chemicals.
***Identifying* hazards** may include:	• checking equipment or work area before and during work • housekeeping • inspecting workplace equipment and work areas.

Appropriate personnel may include:	• health and safety representatives
	• managers
	• OHS personnel
	• other persons, including emergency service personnel authorised or nominated by organisation or industry to:
	  • approve specified work
	  • direct specified work and functions
	  • inspect specified work
	  • perform specified work and functions
	• supervisors and team leaders.

Workplace procedures may include specific OHS procedures and organisational policies or procedures relating to:	• assessment and control of risks • consultation and participation arrangements for employees • emergency response • OHS issue resolution • safe operating procedures or instructions that cover but are not

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	limited to: • awareness of electrical hazards • awareness of environmental hazards • confined space procedures • provision of first aid • safe use of tools and equipment • working safely around electrical wiring, cables and overhead powerlines • specific hazards • reporting OHS issues • use of PPE • workplace safety inspections.
Company requirements may include:	• counselling and disciplinary processes • following procedures to dispose of, re-use or recycle resources • maintaining plant and equipment • purchasing supplies and equipment • work procedures and work instructions.
OHS legislation may include:	• general duty of care under OHS legislation and common law • provisions relating to OHS issue resolution • provisions relating to roles and responsibilities of health and safety representatives and OHS committees • regulations and codes of practice, including regulations and codes of practice relating to hazards present in workplace or industry • state, territory and commonwealth OHS Acts.
Participating may include:	• formal and informal meetings of: • OHS committees • other committees, such as consultative, planning and purchasing • suggestions, requests, reports and concerns put forward by employees to management.
Emergency procedures may include:	• accident and incident reporting • chemical containment • evacuations • following instructions from authorised or appropriate personnel during hazardous events • provision of first aid.
Hazardous events may include:	• accidents, including motor vehicle accidents • acts of violence • bomb threats • chemical spills

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	• fire and explosions • inhalation of dangerous substances • natural disasters.

Unit Sector(s)

Common

Custom Content Section

Not applicable.

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UEENEEE101A Apply Occupational Health and Safety regulations, codes and practices in the workplace

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor **1**)

1.1) Descriptor

This unit specifies the mandatory requirements of occupational health and safety and how they apply to the various electrotechnology work functions. It encompasses responsibilities for health and safety, risk management processes at all operative levels and adherence to safety practices as part of the normal way of doing work.

Application of the Unit

Not Applicable

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Licensing/Regulatory Information

1.2) License to practice

During Training: Competency development activities are subject to regulations directly related to licencing, occupational health and safety and where applicable contracts of training such as apprenticeships.

In the workplace: The application of the skills and knowledge described in this unit require a license to practice in the workplace where work is carried out on electrical equipment or installations which are designed to operate at voltages greater than 50 V a.c. or 120 V d.c.

Other conditions may apply under State and Territory legislative and regulatory requirements.

Pre-Requisites

Prerequisite Unit(s) **2)**

2.1) Competencies

There are no prerequisite competencies for this unit.

Employability Skills Information

Employability Skills **3)**

This unit contains Employability Skills

The required outcomes described in this unit of competency contain applicable facets of Employability Skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements.

Application of the Unit **4)**

This unit addresses information, processes and techniques for the application of general occupational health and safety requirements in workplaces and is essential for employees without managerial or supervisory responsibilities

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Elements and Performance Criteria Pre-Content

6) Elements describe the essential outcomes of a unit of competency

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA	
1 Prepare to enter a work area	1.1	Work area access permits are obtained from appropriate personnel according to established procedures
	1.2	Safe work methods for controlling risk obtained, read and understood prior to undertaking a work activity.
	1.3.	Preparations for electrical and non-electrical isolation are carried out to prevent creation of hazards from loss of machine/system/process control according to established procedures.
	1.4	Tools and equipment needed for the work are checked for safety and correct functionality according to established procedures and regulatory requirements.
2 Apply safe working practices.	2.1	Safe work methods for controlling risk are followed accurately.
	2.2	Workplace procedures for dealing with accidents, fires and emergencies are followed according to work procedures and scope of responsibility and competencies.

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ELEMENT	PERFORMANCE CRITERIA	
3. Follow workplace procedures for hazard identification and risk control	3.1	Hazards are identified and control measures implemented and monitored through active participation in the consultation process with employer and other employees.
	3.2	Hazards in the work area are recognised and reported to appropriate personnel according to established procedures.
	3.3	OHS records of incidents are completed in accordance with regulatory requirements and established procedures.
	3.4	Workplace instructions and training are followed accurately within established procedures.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

7) This describes the essential skills and knowledge and their level, required for this unit.

Evidence shall show that knowledge has been acquired of safe working practices and applying OHS practices in the workplace.

The knowledge and skills shall be contextualised to current industry standards, technologies and practices.

KS01-EE101A Occupational Health and Safety principles

Evidence shall show an understanding of Occupational Health and Safety to an extent indicated by the following aspects

T1 The basic legal requirements covering occupational health and safety in the workplace encompassing:

- underlying principles of OH&S
- general aims and objectives of the relevant state or territory legislation relating to OH&S.
- employer and employee responsibilities, rights and obligations.
- major functions of safety committees and representatives.
- powers given to Occupational Health and Safety Inspectors
- housekeeping and potential hazards in relation to improper housekeeping
- selecting appropriate personal protective equipment (PPE) given hazardous situations

T2 The work environment encompassing:

- typical hazards associated with a range of work environments
- procedures used to control the risks associated with these hazards
- principles of risk assessment / management and state the purpose of each.
- hierarchy of OH&S hazard control measures.
- required documentation for risk assessment.
- commonly used workplace safety signs.
- workplace emergencies that pose a threat to health and safety and suitable procedure for an emergency workplace evacuation.
- appropriate fire extinguisher for a given type of fire.
- requirements for the location, mounting and maintenance of portable fire extinguishers.
- basic process of fighting a fire.
- Importance of safe premises, buildings and security in an industrial setting and the consequences of non- compliance.

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REQUIRED SKILLS AND KNOWLEDGE

- standard work procedure.

T3 Manual Handling encompassing:

- typical manual handling injuries and the effect they can have on lifestyle
- situations that may cause manual handling injuries
- correct procedures for lifting and carrying to prevent manual handling injuries

T4 Chemicals in the workplace encompassing:

- hazardous substances and dangerous goods.
- classification of chemicals as hazardous substances and/or dangerous goods
- requirements for labelling of chemicals in the workplace
- safe storage procedures for chemicals
- purpose and interpretation of material safety data sheet (MSDS)

T5 Working at heights encompassing:

- dangers associated with working on ladders and scaffolds
- identification of work area as a height risk and use appropriate safety equipment to prevent a fall
- selecting an appropriate ladder for a given situation and perform a safety check before use
- precautions that should be taken when ascending and working off a ladder
- precautions that should be taken when working on and around a scaffold and elevated platforms.

T6 Confined spaces encompassing:

- hazards associated with working in a confined space
- identifying workplace situations that could be classified as a confined space
- control measures for working in a designated confined space

T7 Physical and psychological hazards encompassing:

- short and long term effects of excessive noise and techniques to avoid damage to hearing due to excessive noise
- effects of vibration on the human body and work practices to protect against vibration
- effects of thermal stress on the human body and work practices to protect against thermal stress
- effects of ultraviolet (UV) radiation on the human body and work practices to protect against UV radiation.
- dangers associated with laser operated equipment and tools and suitable protective measures to overcome the danger.
- occupational overuse syndrome, how it occurs and means to overcome it
- factors that cause stress in the workplace, symptoms of a person suffering from stress and personal stress management techniques
- detrimental effects and dangers of drug and alcohol use in the workplace

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REQUIRED SKILLS AND KNOWLEDGE

T8 Working safely with electricity encompassing:

- effects of electric shock on the human body
- common causes of electrical accidents
- precautions that can minimise the chance of electric shock (earthing, extra low voltage, fuses, circuit breakers and residual current devices – RCDs)
- protection offered by a residual current device (RCD)
- need for ensuring the (safe) isolation of an electrical supply
- appropriate method of removing an electric shock victim from a live electrical situation

T9 Life support - CPR in the workplace encompassing:

- First Aid.
- responsibilities of the First Aider.
- priorities of first aid management for any accident or injury.
- procedures required at an accident scene.
- legal and ethical issues, which may impact on the management of care.
- 'Duty of Care'.
- examination of a casualty for injuries.
- effect of cardio pulmonary arrest on the body.
- Managing simulated conditions of: airway obstruction; respiratory arrest and cardio pulmonary arrest,
- single and two-person cardio pulmonary resuscitation (CPR).
- signs and symptoms of an altered level of consciousness
- management of simulation of a casualty with an altered level of consciousness.
- signs and symptoms of shock.
- management of simulation of a casualty in shock

Evidence Guide

EVIDENCE GUIDE

9) The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.

The Evidence Guide forms an integral part of this unit. It must be used in conjunction with all parts of the unit and performed in accordance with the Assessment Guidelines of this Training Package.

Overview of Assessment	**9.1**) Longitudinal competency development approaches to

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EVIDENCE GUIDE

assessment, such as Profiling, require data to be reliably gathered in a form that can be consistently interpreted over time. This approach is best utilised in Apprenticeship programs and reduces assessment intervention. It is the industry-preferred model for apprenticeships. However, where summative (or final) assessment is used it is to include the application of the competency in the normal work environment or, at a minimum, the application of the competency in a realistically simulated work environment. It is recognised that, in some circumstances, assessment in part or full can occur outside the workplace. However, it must be in accordance with industry and regulatory policy.

Methods chosen for a particular assessment will be influenced by various factors. These include the extent of the assessment, the most effective locations for the assessment activities to take place, access to physical resources, additional safety measures that may be required and the critical nature of the competencies being assessed.

The critical safety nature of working with electricity, electrical equipment, gas or any other hazardous substance/material carries risk in deeming a person competent. Sources of evidence need to be 'rich' in nature to minimise error in judgment.

Activities associated with normal everyday work have a bearing on the decision as to how much and how detailed the data gathered will contribute to its 'richness'. Some skills are more critical to safety and operational requirements while the same skills may be more or less frequently practised. These points are raised for the assessors to consider when choosing an assessment method and developing assessment instruments. Sample assessment instruments are included for Assessors in the Assessment Guidelines of this Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

9.2)

Before the critical aspects of evidence are considered all prerequisites must be met.

Evidence for competence in this unit shall be considered holistically. Each element and associated performance criteria shall be demonstrated on at least two occasions in accordance with the 'Assessment Guidelines - UEE07'. Evidence shall also comprise:

- A representative body of work performance demonstrated within the timeframes typically expected of the discipline,

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EVIDENCE GUIDE

work function and industrial environment. In particular this shall incorporate evidence that shows a candidate is able to:

- Implement Occupational Health and Safety workplace procedures and practices, including the use of risk control measures as specified in the performance criteria and range statement encompassing:
- Apply sustainable energy principles and practices as specified in the performance criteria and range statement
- Demonstrate an understanding of the essential knowledge and associated skills as described in this unit. It may be required by some jurisdictions that RTOs provide a percentile graded result for the purpose of regulatory or licensing requirements.
- Demonstrate an appropriate level of skills enabling employment
- Conduct work observing the relevant Anti Discrimination legislation, regulations, polices and workplace procedures

- Demonstrated consistent performance across a representative range of contexts from the prescribed items below:
  - Applying OHS practices in the workplace as described in 8) and including:

A Preparing to enter the workplace including, the use of work permits and clearances and isolation permissions.

B Understanding and following risk control safe work methods.

C Applying work procedures and instructions as they apply to risk control measures.

D Dealing with accidents and emergencies within the scope of responsibility.

E Participation in consultation processes, identifying hazards and implementing and monitoring control measures.

F Dealing with unplanned events

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EVIDENCE GUIDE

Note:
Ability to implement these Occupation Health and Safety measures shall be demonstrated on all occasions safety issues arise.

Context of and specific resources for assessment

9.3)

This unit should be assessed as it relates to normal work practice using procedures, information and resources typical of a workplace. This should include:

- OHS policy and work procedures and instructions.
- Suitable work environment, facilities, equipment and materials to undertake actual work as prescribed in this unit.

These should be used in the formal learning/assessment environment.

Note:

Where simulation is considered a suitable strategy for assessment, conditions for assessment must be authentic and as far as possible reproduce and replicate the workplace and be consistent with the approved industry simulation policy.

The resources used for assessment should reflect current industry practices in relation to applying OHS practices in the workplace.

Method of assessment

9.4)

This unit shall be assessed by methods given in Volume 1, Part 3 'Assessment Guidelines'.

Note:
Competent performance with inherent safe working practices is expected in the Industry to which this unit applies. This requires that the specified essential knowledge and associated skills are assessed in a structured environment which is primarily intended for learning/assessment and incorporates all necessary equipment and facilities for learners to develop and demonstrate the essential knowledge and skills described in this unit.

Concurrent assessment and relationship with other units

9.5)

This unit shall be assessed concurrently, as it relates to other units undertaken in a possible skill clusters or qualification.

Components of this unit are included in the critical aspects of

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EVIDENCE GUIDE

evidence of all units to help ensure the appropriate level of responsibility for safety has been acquired

Range Statement

RANGE STATEMENT

8) This relates to the unit as a whole providing the range of contexts and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

This unit shall be demonstrated in relation to each of the following

- Relevant Occupational Health and Safety legislation, regulations and codes of practice related to hazards present in the industry and particular workplace
- Accepted industry work procedures and the specific safety procedures and work instructions for particular workplace.

Generic terms used throughout this Vocational Standard shall be regarded as part of the Range Statement in which competency is demonstrated. The definition of these and other terms that apply are given in Volume 2, Part 2.1.

Unit Sector(s)

Not Applicable

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Competency Field

2.2) Literacy and numeracy skills

Participants are best equipped to achieve competency in this unit if they have reading, writing and numeracy skills indicated by the following scales. Description of each scale is given in Volume 2, Part 3 'Literacy and Numeracy'

Reading	3	Writing	3	Numeracy	3

Custom Content Section

Competency Field **5)**

Electrotechnology

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UEENEEJ102A Prepare and connect refrigerant tubing and fittings

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor **1**)

1.1) Descriptor

This unit covers the basic connection of refrigeration and air conditioning piping/tubing and fittings. It encompasses the safe use of hand, fixed and portable power tools for cutting, flaring, bending, swaging, silver brazing copper tube to copper tube, bundy tube and brass and steel fittings, measurement and reading drawings and diagrams.

Application of the Unit

Application of the Unit **4**)

This competency standard is suitable for employment-based programs under an approved contract of training at the AQF level of the qualification in which the unit is first packaged or higher.The unit may be selected as an elective from the relevant schedule (see qualification packaging rules) provided that all prerequisite units are undertaken or addressed through recognition processes.

This unit may be included in a skill set provided that it is listed in the schedule of electives (see Qualification Framework) and all prerequisite units are undertaken or addressed through recognition processes.

Delivery and assessment of this unit should be undertaken within regard to the requirements of License to Practice (1.2 above), Prerequisite Competencies and Literacy and Numeracy skills (2 above) and the recommendations for concurrent assessment and relationship with other units (9.5 below).

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Application of the Unit **4**)

Practice in the workplace and during training is also subject to regulations directly related to occupational health and safety and where applicable contracts of training such as apprenticeships.

Note:

1. Compliance with permits may be required in various jurisdictions and typically relates to the operation of plant, machinery and equipment such as elevating work platforms, powder operated fixing tools, power operated tools, vehicles, road signage and traffic control and lifting equipment. Permits may also be required for some work environments such as confined spaces, working aloft, near live electrical apparatus and site rehabilitation.

2. Compliance may be required in various jurisdictions relating to currency in First Aid, confined space, lifting, risk safety measures etc.

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Licensing/Regulatory Information

1.2) License to practice

The skills and knowledge described in this unit may, in some jurisdictions, require a license to practice in the workplace subject to regulations for undertaking refrigeration and air conditioning work. Practice in workplace and during training is also subject to regulations directly related to occupational health and safety and where applicable contracts of training such as apprenticeships.

Note:
1. Compliance with permits may be required in various jurisdictions and typically relates to the operation of plant, machinery and equipment such as elevating work platforms, powder operated fixing tools, power operated tools, vehicles, road signage and traffic control, lifting equipment. Permits may also be required for some work environments such as confined spaces, working aloft, near live electrical apparatus and site rehabilitation.
2. Compliance may be required in various jurisdictions relating to currency in First Aid, confined space, lifting and risk safety measures.

Pre-Requisites

Prerequisite Unit(s) **2)**

2.1) Competencies

Granting competency in this unit shall be made only after competency in the following unit(s) has/have been confirmed.

UEENEEE101A	Apply Occupational Health and Safety regulations, codes and practices in the workplace

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Employability Skills Information

Employability Skills **3**)

This unit contains Employability Skills

The required outcomes described in this unit of competency contain applicable facets of Employability Skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements.

Elements and Performance Criteria Pre-Content

6) Elements describe the essential outcomes of a unit

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA	
1 Prepare to fabricate tubing and attach fittings for refrigeration and/or air conditioning systems	1.1	OHS procedures for a given work area are identified, obtained and understood through established routines and procedures
	1.2	Established OHS risk control measures and procedures are followed in preparation for the work.
	1.3	Safety hazards which have not previously been identified are reported and advice on risk control measures is sought from the work supervisor.
	1.4	The nature of work is obtained from documentation or from work supervisor to establish the scope of work to be undertaken.
	1.5	Advice is sought from the work supervisor to ensure the work is coordinated effectively with others.

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ELEMENT	PERFORMANCE CRITERIA	
	1.6	Sources of materials that may be required for the work are accessed in accordance with established routines and procedures.
	1.7	Tools, equipment and testing devices needed to carry out the work are obtained and checked for correct operation and safety
2 Fabricate tubing and attach fittings for refrigeration and/or air conditioning systems	2.1	Established OHS risk control measures and procedures for carrying out the work are followed.
	2.2	Work in strict accordance with OHS requirements and when necessary conducted within established safety procedures
	2.3	Established methods used to cut, flare, swage, bend, silver braze tubing and fittings as they apply to the refrigeration/air conditioning equipment arrangements.
	2.4	Refrigerant tubing and fittings are silver brazed with the use of dry nitrogen to prevent contamination.
	2.5	Fabricate tubing and attach fittings are prepared efficiently without waste of materials or damage/contamination to apparatus and the surrounding environment or services and using sustainable energy practices.
	2.6	Routine quality checks are carried out in accordance with work instructions/or specifications including dimensions and pressure testing.
3 Complete work and report	3.1	OHS work completion risk control measures and procedures are followed.
	3.2	Work site is cleaned and made safe in accordance with established procedures.
	3.3	Work supervisor is notified of the completion of the work in accordance with established procedures.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

7) This describes the essential skills and knowledge and their level, required for this unit.

Evidence shall show that knowledge has been acquired of safe working practices and preparing refrigerant tubing and fittings.

All knowledge and skills detailed in this unit should be contextualised to current industry practices and technologies.

KS01-EJ102A Refrigerant tubing and fittings techniques

Evidence shall show an understanding of cutting, bending and joining refrigeration piping and tubing tools, equipment and techniques, applying safe working practices and relevant Standards, Codes and Regulations to an extent indicated by the following aspects:

T1 Piping

- Refrigeration & water grade copper tube
- Maintaining cleanliness (always capped, do not blow out with mouth etc)
- Soft and hard drawn tube
- Tubing applications (soft, hard, pair coil, water grade etc)
- Tube qualities - diameter, wall thickness (gauge) and pressure ratings (R410A etc)
- Pipe insulation (types - tube, slit tube, sheet etc and joining methods - glue, tape etc)
- Other tube materials (Bundy, steel, aluminum, brass)

T2 Cutting

- Cutting tools (Imps, normal & large pipe cutters, tube cutting rings etc)
- Precautions while cutting (sharp burrs, sharp blades etc)
- Deburring tools (reamers, deburrers etc)

T3 Bending

- Bending tools (springs, levers, presses etc)
- Precautions while bending (work hardening, collapsing etc)
- Bending hard drawn tube - the process of annealing

T4 Joining

- Flare nuts (plain, short barrel, frost proof, reducing)
- Flaring tools (flare block, eccentric with clutch for high pressure tube)
- Precautions while flaring (deburred, length past block face, cleanliness)
- Swaging tools (punch, flare block, expander etc)

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REQUIRED SKILLS AND KNOWLEDGE

- Precautions while swaging (length past block face, tube shortening effect, cleanliness etc)
- Other tube fittings (BSP to flare elbows, tees, unions, plugs, flare washers, Lokrings etc)
- Thread sealants (tapes, pastes etc)
- Access valves (Schrader, piercing, cut-away of service valve/s)
- Precautions using access valves (refrigerant leakage, core removal, limitations on piercing valves etc)

T5 Soldering and brazing equipment

- Gas types (oxy acetylene, air acetylene, propane, Mapp gas)
- Hazards associated with their use (cylinder transport, remove regulator, oil & oxy = bang)
- Personal safety (MSDS - oxy, acetylene, propane, MAPP gas)
- Flash back arrestors
- Setting up equipment (fitting regulator, adjusting pressures, tip selection)
- Igniting and flame types (flint guns, oxidising, neutral, carburising)
- Care and maintenance of equipment (hoses, regulator, tips, cylinders, flash back arrestors)

T6 Silver solder

- Types (yellow, brown, blue and their metal components)
- Personal safety (MSDS - silver brazing alloys)
- Flux and its use (dissimilar metals)
- Personal safety (MSDS - flux)
- Preparing surfaces (removing oxides, oils, applying flux)

T7 Soldering techniques

- Dry nitrogen
- Personal safety (MSDS - nitrogen)
- Applying dry nitrogen to a piping circuit
- Silver soldering copper to copper
- Silver soldering copper to dissimilar metals
- Annealing copper tube

Evidence Guide

EVIDENCE GUIDE

9) The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement

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EVIDENCE GUIDE

and the Assessment Guidelines for this Training Package. .

The Evidence Guide forms an integral part of this Unit. It must be used in conjunction with all parts of this unit and performed in accordance with the Assessment Guidelines of this Training Package.

Overview of Assessment

9.1)

Longitudinal competency development approaches to assessment, such as Profiling, require data to be reliably gathered in a form that can be consistently interpreted over time. This approach is best utilised in Apprenticeship programs and reduces assessment intervention. It is the industry-preferred model for apprenticeships. However, where summative (or final) assessment is used it is to include the application of the competency in the normal work environment or, at a minimum, the application of the competency in a realistically simulated work environment. In some circumstances, assessment in part or full can occur outside the workplace. However, it must be in accordance with industry and regulatory policy.

Methods chosen for a particular assessment will be influenced by various factors. These include the extent of the assessment, the most effective locations for the assessment activities to take place, access to physical resources, additional safety measures that may be required and the critical nature of the competencies being assessed.

The critical safety nature of working with electricity, electrical equipment, gas or any other hazardous substance/material carries risk in deeming a person competent. Sources of evidence need to be 'rich' in nature to minimise error in judgment.

Activities associated with normal everyday work influence decisions about how/how much the data gathered will contribute to its 'richness'. Some skills are more critical to safety and operational requirements while the same skills may be more or less frequently practised. These points are raised for the assessors to consider when choosing an assessment method and developing assessment instruments. Sample assessment instruments are included for Assessors in the Assessment Guidelines of this Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

9.2)

Before the critical aspects of evidence are considered all prerequisites must be met.

Evidence for competence in this unit shall be considered holistically. Each Element and associated performance criteria

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EVIDENCE GUIDE

shall be demonstrated on at least two occasions in accordance with the 'Assessment Guidelines - UEE07'. Evidence shall also comprise:

- A representative body of work performance demonstrated within the timeframes typically expected of the discipline, work function and industrial environment. In particular this shall incorporate evidence that shows a candidate is able to:
  - Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures as specified in the performance criteria and range statement
  - Apply sustainable energy principles and practices as specified in the performance criteria and range statement
  - Demonstrate an understanding of the essential knowledge and associated skills as described in this unit. It may be required by some jurisdictions that RTOs provide a percentile graded result for the purpose of regulatory or licensing requirements.
  - Demonstrate an appropriate level of skills enabling employment
  - Conduct work observing the relevant Anti Discrimination legislation, regulations, polices and workplace procedures
- Demonstrated consistent performance across a representative range of contexts from the prescribed items below:
  - Prepare refrigerant tubing and fittings as described in 8) and including:

    A Applying tubing and fitting appropriately to equipment layout

    B Using established methods to cut, flare, bend, swage and silver brazing copper tube

    C Attaching fittings correctly

    D Conducting component routine quality checks

    E Dealing with unplanned events by drawing on essential knowledge and skills to provide appropriate solutions incorporated in the holistic assessment with the above listed items

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EVIDENCE GUIDE

Note:

Successful completion of relevant vendor training may be used to contribute to evidence on which competency is deemed. In these cases the alignment of outcomes of vendor training with performance criteria and critical aspects of evidence shall be clearly identified.

Context of and specific resources for assessment

9.3)

This unit should be assessed as it relates to normal work practice using procedures, information and resources typical of a workplace. This should include:

- OHS policy and work procedures and instructions.
- Suitable work environment, facilities, equipment and materials to undertake actual work as prescribed by this unit.

These should be part of the formal learning/assessment environment.

Note:

Where simulation is considered a suitable strategy for assessment, conditions must be authentic and as far as possible reproduce and replicate the workplace and be consistent with the approved industry simulation policy.

Evidence should show demonstrated competency in preparing refrigerant tubing and fittings.

Method of assessment

9.4)

This unit shall be assessed by methods given in Volume 1, Part 3 'Assessment Guidelines'.

Note:

Competent performance with inherent safe working practices is expected in the Industry to which this unit applies. This requires assessment in a structured environment which is intended primarily for learning/assessment and incorporates all necessary equipment and facilities for learners to develop and demonstrate the essential knowledge and skills described in this unit.

Concurrent assessment and relationship with other units

9.5)

There are no concurrent assessment recommendations for this unit.

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Range Statement

RANGE STATEMENT

8) This relates to the unit as a whole providing the range of contexts and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

This unit must be demonstrated in relation to preparing refrigerant tubing and fittings for at least two basic different refrigeration/air conditioning equipment layouts, which require cutting, flaring, bending, swaging, silver brazing copper tube to copper tube, bundy tube, brass and steel fittings.

Note:

This includes piping/tubing and fittings for high pressure refrigerants.

Generic terms used throughout this Vocational Standard shall be regarded as part of the Range Statement in which competency is demonstrated. The definition of these and other terms that apply are given in Volume 2, Part 2.1.

Unit Sector(s)

Not Applicable

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Competency Field

2.2) Literacy and numeracy skills

Participants are best equipped to achieve competency in this unit if they have reading, writing and numeracy skills indicated by the following scales. Description of each scale is given in Volume 2, Part 3 'Literacy and Numeracy'

Reading	3	Writing	3	Numeracy	3

2.2) Literacy and numeracy skills

Competency Field **5**)

Refrigeration and Air Conditioning

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UEENEEJ105A Position, assemble and start up single head split air conditioning and water heating heat pump systems

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor **1)**

1.1) Descriptor

This unit covers the assembly, installation and starting up and de-commissioning of single head split air conditioning systems andsplit water heating heat pump systems up to a maximum of 18kWr refrigeration capacity. It encompasses working safely and to standards, following routine procedures to install equipment, connecting pipe work, pressure testing, evacuating, perform functional checks and complete installation / regulatory documentation.

Note: The Ozone Protection and Synthetic Greenhouse Gas Legislation Amendment Bill 2003 may apply to this unit. Prior to planning the delivery of any training and/or assessment activities all legislative and regulatory requirements shall be identified and included.

Application of the Unit

Application of the Unit **4)**

This unit is intended for competency development entry-level employment-based programs incorporated in approved contracts of training. It may also be used to augment previously acquired competencies.

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Licensing/Regulatory Information

1.2) License to practice

The skills and knowledge described in this unit may, in some jurisdictions, require a license to practice in the workplace subject to regulations for undertaking refrigeration and air conditioning work. Practice in workplace and during training is also subject to regulations directly related to occupational health and safety and where applicable contracts of training such as apprenticeships.

Note:
1. The Ozone Protection and Synthetic Greenhouse Gas Legislation Amendment Bill 2003 may apply to this unit. Prior to planning the delivery of any training and/or assessment activities all legislative and regulatory requirements shall be identified and included.

2. Compliance with permits may be required in various jurisdictions and typically relates to the operation of plant, machinery and equipment such as elevating work platforms, powder operated fixing tools, power operated tools, vehicles, road signage and traffic control, lifting equipment. Permits may also be required for some work environments such as confined spaces, working aloft, near live electrical apparatus and site rehabilitation.
3. Compliance may be required in various jurisdictions relating to currency in First Aid, confined space, lifting and risk safety measures.

Pre-Requisites

Prerequisite Unit(s) **2)**

2.1) Competencies

Granting competency in this unit shall be made only after competency in the following unit(s) has/have been confirmed.

UEENEEJ172A	Recover, pressure test, evacuate, charge and leak test refrigerants split systems
UEENEEE101A	Apply Occupational Health and Safety regulations, codes and practices in the workplace
UEENEEJ102	Prepare and connect refrigerant tubing and

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Prerequisite Unit(s) **2)**

A fittings

Employability Skills Information

Employability Skills **3)**

This unit contains Employability Skills

The required outcomes described in this unit of competency contain applicable facets of Employability Skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements.

Elements and Performance Criteria Pre-Content

6) Elements describe the essential outcomes of a unit

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA	
1 Prepare to assemble, install and start up split air conditioning and water heating heat pump systems	1.1	OHS procedures for a given work area are identified, obtained and understood
	1.2	Established OHS risk control measures and procedures in preparation for the work are followed
	1.3	Safety hazards which have not previously been identified are noted and established risk control measures are implemented
	1.4	The work is appropriately sequenced in accordance with job schedule
	1.5	Appropriate personnel are consulted to ensure

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ELEMENT	PERFORMANCE CRITERIA	
		the work is coordinated effectively with others involved on the work site
	1.6	The layout of the pipe work to be installed is determined from job/manufacturer specifications and diagrams
	1.7	Materials needed to carry out the work are obtained in accordance with established procedures and checked against job requirements
	1.8	Tools, equipment and testing devices needed to conduct the work are obtained in accordance with established procedures and checked for correct operation and safety
	1.9	Appropriately licensed electrician is engaged to carry out all electrical work for the air conditioning and water heating heat pump system
	1.10	Appropriately licensed plumber is engaged to carry out all mains water piping work for the heat pump hot water system
	1.11	Preparatory work is checked to ensure no damage has occurred and complies with requirements.
2 Assemble, install and start up split air conditioning and water heating heat pump systems	2.1	OHS risk control measures and procedures for carrying out the work are followed.
	2.2	System components are positioned in the specified location and assembled in strict accordance with manufacturer instructions and industry standards
	2.3	Interconnecting refrigerant piping/tubing is prepared and assembled in strict accordance with manufacturer instructions and industry standards.
	2.4	Components are pressure tested and evacuated in strict accordance with manufacturer instructions and industry standards
	2.5	Established methods for dealing with unexpected situations are discussed with appropriate person

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ELEMENT	PERFORMANCE CRITERIA	
		or persons, documented are dealt with safely and with the approval of an authorised person
	2.6	Ongoing checks of the quality of installation and start up are undertaken in accordance with established procedures
	2.7	Notification is given to appropriate person(s) that the system is ready for electrical and mains water connection in accordance with established procedures. (see note 1)
	2.8	The work is carried out efficiently without waste of materials or damage to apparatus, circuits, the surrounding environment or services and using sustainable energy principles
3 Decommission split air conditioning and water heating heat pump systems	3.1	OHS risk control measures and procedures for carrying out the work are followed.
	3.2	Refrigerant is pump down and/or recovered from the indoor unit. Interconnecting refrigerant piping/tubing is removed and the indoor and outdoor refrigerant circuits are sealed in accordance with manufacturer instructions and industry standards/codes of practice
	3.3	Appropriately licensed electrician is engaged to isolate and disconnect electrical supply and cabling from the air conditioning and water heating heat pump system
	3.4	Indoor and outdoor unit, refrigerant pipework, water pipeowork condensate drains and electrical conduits/cables are un-mounted.
	3.5	Established methods for dealing with unexpected situations are discussed with appropriate person or persons, documented are dealt with safely and with the approval of an authorised person
	3.6	The work is carried out efficiently without waste of materials or damage to apparatus, circuits, the surrounding environment or services and using sustainable energy principles

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ELEMENT	PERFORMANCE CRITERIA	
4 Test single head split air conditioning and water heating heat pump systems and document	4.1	OHS risk control work completion measures and procedures are followed
	4.2	The system performance is tested to ensure compliance with technical standards, manufacturer/ job specifications and requirements (Note 2)
	4.3	Work site and equipment is cleaned and made safe in accordance with established procedures. (Note 3)
	4.4	Work completion is documented and appropriate person(s) notified in accordance with established procedures

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Note.
1. a. Electrical connection shall be carried out by an appropriately licensed electrician.
b. Mains water connection shall be carried out by an appropriately licensed plumber.2. Unit performance is completed after associated electrical work is carried out by an appropriate electrically licensed person.
3. Making safe includes leak testing and fitting of caps to all refrigerant access ports, which could allow refrigerant to escape into the environment. It includes de-commissioning.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

7) This describes the essential skills and knowledge and their level, required for this unit.

Evidence shall show that knowledge has been acquired of safe working practices and positioning, assembling and starting up split air conditioning and water heating heat pump systems.

All knowledge and skills detailed in this unit should be contextualised to current industry practices and technologies.

KS01-EJ105A Split air conditioning and water heating heat pump system installation

Evidence shall show an understanding of split air conditioning and water heating heat pump system installation, start-up and decommissioning, applying safe working practices and relevant Standards, Codes and Regulations to an extent indicated by the following aspects:

T1 Sustainable energy

- The earth's atmosphere
- The greenhouse effect
- Energy usage in Australia (gases, coal, fuel oil etc)
- Projected population increase and its effects
- International and national greenhouse imperatives: the role of regulators and similar bodies (Kyoto Protocol)

T2 Sustainable energy work practices

- Definitions
- Renewable energy technologies (solar, wind, biomass, geothermal, tidal, hydro, nuclear)
- The concept of co-generation
- Economic benefits of sustainable energy initiatives

T3 Heritage awareness

- Heritage listings (concept and types (world, national, commonwealth etc))
- Purpose of regulations related to maintenance of listed sites
- Responsibilities while working in and around listed sites

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REQUIRED SKILLS AND KNOWLEDGE

- Environmental protection
- Government agencies (AGO, EPHC, DEC etc)
- Environmental protection (land, water, atmosphere, human settlement, biodiversity etc)
- Purpose of regulations related to environmental protection
- Responsibilities while working in and around environmentally protected sites
- Protocols for working in and around protected sites (legislated acts - ozone protection etc)

T4 Relevant installation codes

- Applicable standards and codes (building, electrical, health, environmental – OH&S act, ozone protection act, Refrigerant Handling Code of Good Practice
- Introduction to MEPS (minimum energy performance standards) and the star rating

T5 Split air conditioning systems

T6 Types and applications

- categories (high wall, floor mounted, ceiling mounted, cassette, ducted)
- sub categories (single head, multi head)
- types (cooling only, reverse cycle, inverter, dc)
- typical applications for each category / type
- system ratings (hp vs kw, standard ambient conditions for capacity ratings ,actual star rating examples)
- Components, construction and operation
- evaporators (finned induced and forced draught)
- metering devices (capillary, restrictor)
- service ports (ball valves, post valves, schrader valves)
- reverse cycle (reversing valves)
- air distribution – non-ducted (fans, filters, swing louvers etc)
- air distribution - ducted (ducting types, bto's, dampers, outlets, grilles, plenums, filters etc)
- typical ducting layouts (maps)
- typical mechanical system layouts (cooling only, reverse cycle)
- evaporating and condensing temperatures / pressures - design and typical operating values
- controls - operating and safety (encapsulated lp & hp sensors, compressor overload, de-ice stat etc)

T7 Split water heating heat pump systems

- Types and typical applications. including hot water heating and swimming pool heating
- Components, construction and operation
- Cooling coil
- Heating coil
- Metering devices (capillary, restrictor)

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REQUIRED SKILLS AND KNOWLEDGE

- Service ports (ball valves, post valves, Schrader valves)
- Typical mechanical system layouts
- Evaporating and condensing temperatures / pressures - design and typical operating values
- Controls - operating and safety (encapsulated LP & HP sensors, compressor overload, etc)

T8 Installation of unit and pipework

- Respect for customers premises (on-time, respectful language, private commodities, toilets, clean-up etc)
- Noise and vibration (problems for neighbours, typical council requirements)
- Location & mounting - outdoor unit (suitable locations, slabs, brackets (wall/roof), machine pads (e.g. waffle) etc)
- Location & mounting - indoor unit/water heater (suitable locations, penetrations, hanging, mounting methods)
- Refrigerant piping (layout, installation, insulation, pair coil, protection (steel trunking, plastic pipe duct))
- Condensate drains and pumps (correct drainage, safety drain on FCU, condensate pumps)
- Personal safety (safe lifting, correct use of ladder and platforms)
- Manufacturers installation instructions (examples of typical manufacturers installation guides)
- Electrical connections by electrician
- Mains water connections by plumber

T9 System start up

- Manufacturers start-up instructions (examples of typical manufacturers guides)
- Pressure testing refrigerant pipework and system (nitrogen)
- Evacuation
- Opening outdoor unit valves
- Checking refrigerant charge (pressures, temperatures, sweat line, evaporator superheat etc)
- Adding refrigerant (manufacturers recommended top-up values for longer pipework runs)
- Leak detection
- Customer familiarisation (completing warranty card, operating instructions, general maintenance instructions)

T10 De-commission split air conditioning systems

- Closing isolations valves on outdoor unit.
- Indoor unit pump down and recovery
- Sealing refrigerant components
- Electrical isolation and disconnection by electrician

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REQUIRED SKILLS AND KNOWLEDGE

- Mains water isolation and disconnection by plumber
- Unit, piping, drain and electrical cable removal

Evidence Guide

EVIDENCE GUIDE

9) The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package. .

The Evidence Guide forms an integral part of this Unit. It must be used in conjunction with all parts of this unit and performed in accordance with the Assessment Guidelines of this Training Package.

Overview of Assessment

9.1)

Longitudinal competency development approaches to assessment, such as Profiling, require data to be reliably gathered in a form that can be consistently interpreted over time. This approach is best utilised in Apprenticeship programs and reduces assessment intervention. It is the industry-preferred model for apprenticeships. However, where summative (or final) assessment is used it is to include the application of the competency in the normal work environment or, at a minimum, the application of the competency in a realistically simulated work environment. In some circumstances, assessment in part or full can occur outside the workplace. However, it must be in accordance with industry and regulatory policy.

Methods chosen for a particular assessment will be influenced by various factors. These include the extent of the assessment, the most effective locations for the assessment activities to take place, access to physical resources, additional safety measures that may be required and the critical nature of the competencies being assessed.

The critical safety nature of working with electricity, electrical equipment, gas or any other hazardous substance/material carries risk in deeming a person competent. Sources of evidence need to be 'rich' in nature to minimise error in judgment.

Activities associated with normal everyday work influence decisions about how/how much the data gathered will contribute to its 'richness'. Some skills are more critical to safety and operational requirements while the same skills may be more or less frequently practised. These points are raised for the assessors to consider when choosing an assessment method and developing assessment

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EVIDENCE GUIDE

instruments. Sample assessment instruments are included for Assessors in the Assessment Guidelines of this Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

9.2)

Before the critical aspects of evidence are considered all prerequisites must be met.

Evidence for competence in this unit shall be considered holistically. Each Element and associated performance criteria shall be demonstrated on at least two occasions in accordance with the 'Assessment Guidelines - UEE07'. Evidence shall also comprise:

- A representative body of work performance demonstrated within the timeframes typically expected of the discipline, work function and industrial environment. In particular this shall incorporate evidence that shows a candidate is able to:
  - Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures as specified in the performance criteria and range statement
  - Apply sustainable energy principles and practices as specified in the performance criteria and range statement
  - Demonstrate an understanding of the essential knowledge and associated skills as described in this unit. It may be required by some jurisdictions that RTOs provide a percentile graded result for the purpose of regulatory or licensing requirements.
  - Demonstrate an appropriate level of skills enabling employment
  - Conduct work observing the relevant Anti Discrimination legislation, regulations, polices and workplace procedures
- Demonstrated consistent performance across a representative range of contexts from the prescribed items below:
  - Position, assemble and start up split air conditioning and water heating heat pump systems as described in 8) and including:

    A Determining job requirements correctly

    B Positioning and assembling system components to specifications

    C Assembling piping and tubing to specifications

    D Pressure testing an evacuating the system in accordance

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EVIDENCE GUIDE

with manufacturer's instructions and industry standards, codes and regulations.

Note:
Refrigerant purging is not permitted in Australia

E Giving notification to appropriate person for electrical connections to be completed

F De-commissioning single head split air conditioning and water heating heat pump units

G Testing system performance correctly to manufacturer design specifications

H Documenting work activities

I Demonstrating a basic understanding of system performance outside manufacturers design specifications

J Demonstrating a basic understanding of the compressor, condenser, evaporator and flow control types and their function relevant to single head split system installation

K Dealing with unplanned events by drawing on essential knowledge and skills to provide appropriate solutions incorporated in the holistic assessment with the above listed items

Note:
Successful completion of relevant vendor training may be used to contribute to evidence on which competency is deemed. In these cases the alignment of outcomes of vendor training with performance criteria and critical aspects of evidence shall be clearly identified.

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EVIDENCE GUIDE

Context of and specific resources for assessment

9.3)

This unit should be assessed as it relates to normal work practice using procedures, information and resources typical of a workplace. This should include:

- OHS policy and work procedures and instructions.
- Suitable work environment, facilities, equipment and materials to undertake actual work as prescribed by this unit.

These should be part of the formal learning/assessment environment.

Note:
Where simulation is considered a suitable strategy for assessment, conditions must be authentic and as far as possible reproduce and replicate the workplace and be consistent with the approved industry simulation policy.

Evidence should show demonstrated competency in positioning, assembling and starting up split air conditioning and water heating heat pump systems.

Method of assessment

9.4)

This unit shall be assessed by methods given in Volume 1, Part 3 'Assessment Guidelines'.

Note:
Competent performance with inherent safe working practices is expected in the Industry to which this unit applies. This requires assessment in a structured environment which is intended primarily for learning/assessment and incorporates all necessary equipment and facilities for learners to develop and demonstrate the essential knowledge and skills described in this unit.

Concurrent assessment and relationship with other units

9.5)

There are no concurrent assessment recommendations for this unit.

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Range Statement

RANGE STATEMENT

8) This relates to the unit as a whole providing the range of contexts and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

This unit must be demonstrated in relation to the assembly, installation and starting up and de-commissioning of single head split air conditioning and water heating heat pump systems (hot water or swimming pool) up to a maximum of 18kWr 'refrigeration' capacity with the following attributes:

- safe working
- Australian/New Zealand standards applied
- routine procedures followed
- equipment installation
- pipe work connection
- pressure test
- evacuation
- functional performance checks
- installation/regulatory documentation completion

Note:
1. The Ozone Protection and Synthetic Greenhouse Gas Legislation Amendment Bill and the Ozone Protection and Synthetic Gas Management Regulations apply to this qualification. Prior to planning the delivery of any training and/or assessment activities all legislative and regulatory requirements shall be identified and included.

2. This includes the installation, commissioning and de-commissioning of single head wall hung split air conditioning and water heating heat pump systems. The maximum plant capacity for each system is 18 kWr.

3. This unit DOES NOT COVER COMPETENCIES FOR service, repair, maintenance, diagnostic/fault finding and electrical work and the safe and proper installation of commercial refrigeration and air conditioning and water heating heat pump plant and equipment.

Generic terms used throughout this Vocational Standard shall be regarded as part of the Range Statement in which competency is demonstrated. The definition of these and other terms that apply are given in Volume 2, Part 2.1.

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Unit Sector(s)

Not Applicable

Competency Field

2.2) Literacy and numeracy skills

Participants are best equipped to achieve competency in this unit if they have reading, writing and numeracy skills indicated by the following scales. Description of each scale is given in Volume 2, Part 3 'Literacy and Numeracy'

Reading	3	Writing	3	Numeracy	3

2.2) Literacy and numeracy skills

Competency Field **5**)

Refrigeration and Air Conditioning

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UEENEEJ172A Recover, pressure test, evacuate, charge and leak test refrigerants - split systems

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor **1)**

1.1) Descriptor

This competency standard unit covers the recovery of refrigerant, pressure and leak testing, evacuation and refrigerant charging in split air conditioning and heat pump systems. It encompasses working safely and to standards, following regulations and industry practices for handling refrigerants and completing the necessary documentation.

Note:
The Ozone Protection and Synthetic Greenhouse Gas Legislation Amendment Bill 2003 may apply to this competency standard unit. Prior to planning the delivery of any training and/or assessment activities all legislative and regulatory requirements shall be identified and included.

Application of the Unit

Application of the Unit **4)**

This unit is intended for competency development entry-level employment-based programs incorporated in approved contracts of training and may be used to augment other electrotechnology qualifications at AQF 2 level or higher.

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Licensing/Regulatory Information

1.2) License to practice

The skills and knowledge described in this unit may, in some States/Territories, require a license to practice in the workplace subject to regulations for undertaking refrigeration and air conditioning work. Practice in workplace and during training is also subject to regulations directly related to occupational health and safety and where applicable contracts of training such as apprenticeships.

Note:
1. The Ozone Protection and Synthetic Greenhouse Gas Legislation Amendment Bill 2003 may apply to this unit. Prior to planning the delivery of any training and/or assessment activities all legislative and regulatory requirements shall be identified and included.
2. Compliance with permits may be required in various jurisdictions and typically relates to the operation of plant, machinery and equipment such as elevating work platforms, powder operated fixing tools, power operated tools, vehicles, road signage and traffic control, lifting equipment. Permits may also be required for some work environments such as confined spaces, working aloft, near live electrical apparatus and site rehabilitation.
3. Compliance may be required in various jurisdictions relating to currency in First Aid, confined space, lifting and risk safety measures

Pre-Requisites

Prerequisite Unit(s) **2)**

2.1) Competencies

Granting competency in this unit shall be made only after competency in the following unit(s) has/have been confirmed.

UEENEEJ102A	Prepare and connect refrigerant tubing and fittings
UEENEEE101A	Apply Occupational Health and Safety regulations, codes and practices in the workplace

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Employability Skills Information

Employability Skills **3**)

This unit contains Employability Skills

The required outcomes described in this unit of competency contain applicable facets of Employability Skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements.

Elements and Performance Criteria Pre-Content

6) Elements describe the essential outcomes of a unit

Elements and Performance Criteria

ELEMENT		PERFORMANCE CRITERIA	
1	Prepare to recover refrigerants, pressure and leak test, evacuate and charge split systems.	1.1	OHS procedures for a given work area are identified, identified, obtained and understood
		1.2	Established OHS risk control measures and procedures are followed in preparation for the work.
		1.3	Safety hazards which have not previously been identified are noted and established risk control measures are implemented.
		1.4	The nature of the problem is obtained from documentation or from work supervisor to establish the scope of work to be undertaken.
		1.5	The work is appropriately sequenced in accordance with job schedule.
		1.6	Appropriate personnel are consulted to ensure the work is coordinated effectively with others involved

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ELEMENT		PERFORMANCE CRITERIA	
			on the work site.
		1.7	Refrigerants, lubricants and cleaning materials needed for the work are obtained in accordance with established procedures and checked against job requirements
		1.8	Tools, equipment and testing devices needed to carry out the work are obtained and checked for correct operation and safety
		1.9	Preparatory work is checked to ensure no damage has occurred and complies with requirements.
2	Recover refrigerants, pressure and leak test, evacuate and charge split systems.	2.1	OHS risk control measures and procedures for carrying out the work are followed
		2.2	Checks are carried out to ensure the system or component parts are isolated, when necessary, in strict accordance with OHS requirements and procedures
		2.3	Machines/plant are checked as being isolated where necessary in strict accordance OHS requirements and procedures and circuits are isolated and confirmed by appropriately competent personnel
		2.4	Refrigerants are removed from a split system safely into suitably labelled containers in accordance with regulatory requirements and industry practices, and any electrical work is referred to an appropriate licensed person
		2.5	Precautions are taken to prevent damage to components while pressure testing the system
		2.6	Pressure testing is conducted using dry nitrogen at a pressure relative to the refrigerant to be used
		2.7	Leaks are located and rectified using testing methods appropriate to the system under test and in accordance with industry practices
		2.8	Split system is evacuated to the required level and cleaned the system of all moisture and other containments in accordance with industry practices

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ELEMENT		PERFORMANCE CRITERIA	
		2.9	A 'Drop test' is used to prove effectiveness of the evacuation in accordance with industry practice using an appropriate electronic vacuum gauge
		2.10	Components lubricants are checked and maintained in accordance with manufacturer's requirements
		2.11	Split systems are charged with the appropriate refrigerant in accordance with manufacturer's requirements and industry practices
		2.12	Problematic situations that arise during the work are dealt with in an appropriate manner
		2.13	Split systems are pressure and leak tested, evacuated and charged efficiently without unnecessary waste of materials or damage to apparatus and the surrounding environment or services and using sustainable energy practices
3	Complete and report refrigerants recovery, pressure and leak test and evacuate and charge work	3.1	OHS risk control work completion measures and procedures are followed
		3.2	Work site is cleaned and made safe in accordance with established procedures
		3.3	Contaminated refrigerant is dealt with in accordance with legislative/regulatory requirements
		3.4	Completion of the work is documented and an appropriate person or persons notified in accordance with established procedures

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

7) This describes the essential skills and knowledge and their level, required for this unit.

Evidence shall show that knowledge has been acquired of safe working practices and recovering, pressure and leak testing, evacuating and charging refrigerants split systems.

All knowledge and skills detailed in this unit should be contextualised to current industry practices and technologies.

KS01-EJ172A Split system basic operating principles, refrigerants and lubricants

Evidence shall show an understanding of refrigerants and lubricants used in split air conditioning and heat pump systems, applying safe working practices and relevant Standards, Codes and Regulations to an extent indicated

T1 The Residential Air Conditioning and Heat Pump Industry and Licensing Requirements

- Brief overview and history of the Australian residential air conditioning/heat pump industry
- Typical applications and equipment
- Overview of the State and federal agencies (environment and heritage, greenhouse office, ARC, OFT etc)
- State and federal licensing requirements
- The ozone protection act
- The ozone layer (function, ozone depleting substances)
- Overview of the Australia and New Zealand refrigerant handling code of practice 2007, Part 2, Systems other than Self-contained low charge systems

T2 Heat

- Matter (atoms, molecules, energy and its different forms)
- Heat energy (definition, unit of measurement)
- Enthalpy (definition, unit of measurement)
- Heat flow (hot to cold)
- Heat transfer
  - methods (conduction, convection, radiation)
  - requirements
  - effects

T3 Temperature and Relative Humidity

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REQUIRED SKILLS AND KNOWLEDGE

- Temperature
- Scale types (imperial, metric, absolute) and their units of measurement
- Conversion to/from absolute values
- Temperature difference/change (td, Δt, unit of measurement)
- Relative humidity

T4 Sensible and Latent Heat

- Definition of specific heat capacity, latent heat and sensible heat (including units of measurement)
- Types of latent heat
- Heat calculations

T5 Pressure

- Define
- Scale types (imperial, metric, absolute) and their units of measurement
- Vacuum scales (Pascals, microns)
- Conversion to/from absolute values
- The basic Gas Laws – Boyles, Charles and Daltons (excl combined or general gas law)
- Pressure gauge types and applications (pressure, compound, vacuum, manometer, magnehelic, barometer)
- Hazards and related safe working practices (dangerous system pressures)
- Care and maintenance (ingress of oil and contaminants (dirt), avoiding needle bounce (especially HP) etc)
- Calibration (atmospheric pressure, send to a specialist etc)
- Appropriate and safe methods of use
- Typical locations

T6 Refrigerant conditions

- Saturation temperature
- Saturated liquid / saturated vapour
- Superheated vapour
- Sub-cooled liquid
- Pressure temperature relationships
- P/T charts
- Enthalpy

T7 The Vapour Compression Cycle

- Major system components
- High and low pressure sides
- Basic system operation

T8 Thermometers and relative humidity devices

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REQUIRED SKILLS AND KNOWLEDGE

- Thermometer types and applications (digital, stem, dial, max/min, non-contact, data loggers)
- Relative Humidity measurement devices and applications (dry bulb/wet bulb, sling, digital)
- Hazards and related safe working practices (working near rotating machinery - fans, pulleys, belts etc)
- Care and maintenance (bending stems, overheating, removing batteries after use, uncoiling capillary)
- Calibration (boiling water, iced water, send to a specialist etc)
- Appropriate and safe methods of use
- Typical locations on a system
- Fitting temperature and relative humidity instruments

T9 Leak Detectors

- Detector types and applications (electronic, halide, bubble, ultra violet)
- Hazards and related safe working practices (working around rotating machinery, open flame, ultra violet light etc)
- Care and maintenance (delicate electronic equipment, changing sensor tip filters, changing gas cartridges etc)
- Calibration (auto calibrating , send to a specialist etc)
- Leak detection procedures

T10 Service Gauges

Manifold Gauges

- Types (dial gauges or electronic, manifolds with additional vacuum and charging ports & sight glasses)
- Typical uses for service gauges (high & low side pressure readings, charging, evacuating)
- Care and maintenance (oil and contaminants (dirt) in hoses, avoiding needle bounce, changing hose seals)
- Calibration (hoses open to atmosphere, adjusting screw etc)
- Hose shut-off valves and adaptors (access control valves, kwik couplers, etc)

System Access Fittings

- Types (Schrader, service valve, post valve, quick couplers etc)
- Typical applications for each
- Hazards and related safe working practices (oil or liquid spray, keeping clean, leaks etc)
- Care and maintenance (gland nuts loosened/tightened, seal caps fitted, regulations on piercing valves)

Using Service Gauges

- Service gauge manifold hose fitting

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REQUIRED SKILLS AND KNOWLEDGE

- Purging
- Pressure readings
- Service gauge manifold hose removal
- Pressure to temperature conversion

T11 Properties of Split Heat Pump Refrigerants

- Types (R22, R407C, R410a, R12 (old units) Hydrocarbons)
- Terms (blend, azeotrope, zeotrope, glide, CFC, HCFC, HFC, HC, bubble point, dew point, critical point, ODP, GWP etc)
- Typical properties of the current refrigerants used in split systems (boiling point, glide, composition (components), comparative latent heat performance etc)

T12 Properties of Split Heat Pump Refrigerant Oils

- Types (mineral, POE, AB) and their applications
- Basic properties (miscibility, dielectric strength and viscosity)
- Typical issues regarding compatibility (neoprene and POE, POE and mineral etc)
- Safe handling (MSDS - POE's, Mineral, AB's - Residual acid's in used oil)

T13 Procedures for Working with Refrigerants

- Contaminants (Non-condensables, moisture, carbon, copper etc), effects of contamination (Acid, motor burnout, oil contamination, seizing, RMD blockage etc) and methods of contamination prevention
- Reclaiming/recovering refrigerants (using recovery pumps)
- Recovery cylinders (suitable types, markings and precautions – Code of Practice)
- Disposing of recovered refrigerants (Code of Practice)
- Pressure testing systems (suitable gases (nitrogen), test pressure etc)
- Purging pipework (illegal in Australia)
- Evacuation of newly installed split systems (vacuum pumps, correct use, 'drop testing')
- Charging refrigerant into a newly installed split system (pre-charged, charging cylinders, electronic scales)
- Detecting refrigerant leaks (electronic, bubbles, halide for R22)
- De-commissioning a split system (recovering refrigerant, isolating in outdoor unit)
- The practice of retrofitting (overview)
- Working with high pressure refrigerants (R410A) and Hydrocarbons (special precautions, tools etc)

Evidence Guide

EVIDENCE GUIDE

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EVIDENCE GUIDE

9) The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package. .

The Evidence Guide forms an integral part of this Unit. It must be used in conjunction with all parts of this unit and performed in accordance with the Assessment Guidelines of this Training Package.

Overview of Assessment

9.1)

Longitudinal competency development approaches to assessment, such as Profiling, require data to be reliably gathered in a form that can be consistently interpreted over time. This approach is best utilised in Apprenticeship programs and reduces assessment intervention. It is the industry-preferred model for apprenticeships. However, where summative (or final) assessment is used it is to include the application of the competency in the normal work environment or, at a minimum, the application of the competency in a realistically simulated work environment. In some circumstances, assessment in part or full can occur outside the workplace. However, it must be in accordance with industry and regulatory policy.

Methods chosen for a particular assessment will be influenced by various factors. These include the extent of the assessment, the most effective locations for the assessment activities to take place, access to physical resources, additional safety measures that may be required and the critical nature of the competencies being assessed.

The critical safety nature of working with electricity, electrical equipment, gas or any other hazardous substance/material carries risk in deeming a person competent. Sources of evidence need to be 'rich' in nature to minimise error in judgment.

Activities associated with normal everyday work influence decisions about how/how much the data gathered will contribute to its 'richness'. Some skills are more critical to safety and operational requirements while the same skills may be more or less frequently practised. These points are raised for the assessors to consider when choosing an assessment method and developing assessment instruments. Sample assessment instruments are included for Assessors in the Assessment Guidelines of this Training Package.

Critical aspects of evidence required to demonstrate

9.2)

Before the critical aspects of evidence are considered all prerequisites must be met.

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EVIDENCE GUIDE

competency in this unit

Evidence for competence in this unit shall be considered holistically. Each Element and associated performance criteria shall be demonstrated on at least two occasions in accordance with the 'Assessment Guidelines - UEE07'. Evidence shall also comprise:

- A representative body of work performance demonstrated within the timeframes typically expected of the discipline, work function and industrial environment. In particular this shall incorporate evidence that shows a candidate is able to:
  - Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures as specified in the performance criteria and range statement
  - Apply sustainable energy principles and practices as specified in the performance criteria and range statement
  - Demonstrate an understanding of the essential knowledge and associated skills as described in this unit. It may be required by some jurisdictions that RTOs provide a percentile graded result for the purpose of regulatory or licensing requirements.
  - Demonstrate an appropriate level of skills enabling employment
  - Conduct work observing the relevant Anti Discrimination legislation, regulations, polices and workplace procedures
- Demonstrated consistent performance across a representative range of contexts from the prescribed items below:
  - Determine the basic operating conditions, recover, pressure and leak test, evacuate and charge refrigerants split systems as described in 8) and including:

A Selecting and using appropriate measuring devices, materials and equipment correctly

B Recording measurements

C Using calculation methods accurately

D Identifying the conditions of a refrigerant at various locations in the vapour compression system

E Documenting operating conditions correctly

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EVIDENCE GUIDE

F Removing and storing refrigerant correctly

G Conducting pressure testing at the appropriate pressure level and without damaging components

H Locating and rectifying leaks

I Evacuating the system to the required standard and using appropriate vacuum measuring instruments

J Charging the system with the appropriate refrigerant

K Completing the necessary documentation

L Dealing with unplanned events by drawing on essential knowledge and skills to provide appropriate solutions incorporated in the holistic assessment with the above listed items

Context of and specific resources for assessment

9.3)

This unit should be assessed as it relates to normal work practice using procedures, information and resources typical of a workplace. This should include:

- OHS policy and work procedures and instructions.
- Suitable work environment, facilities, equipment and materials to undertake actual work as prescribed by this unit.

These should be part of the formal learning/assessment environment.

Note:

Where simulation is considered a suitable strategy for assessment, conditions must be authentic and as far as possible reproduce and replicate the workplace and be consistent with the approved industry simulation policy.

Evidence should show demonstrated competency in recovering, pressure and leak testing, evacuating and charging refrigerants split systems.

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EVIDENCE GUIDE

Method of assessment

9.4)

This unit shall be assessed by methods given in Volume 1, Part 3 'Assessment Guidelines'.

Note:
Competent performance with inherent safe working practices is expected in the Industry to which this unit applies. This requires assessment in a structured environment which is intended primarily for learning/assessment and incorporates all necessary equipment and facilities for learners to develop and demonstrate the essential knowledge and skills described in this unit.

Concurrent assessment and relationship with other units

9.5)

There are no concurrent assessment recommendations for this unit.

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Range Statement

RANGE STATEMENT

8) This relates to the unit as a whole providing the range of contexts and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

This unit must be demonstrated in relation to testing and charging split systems encompassing the following:

- Determining operating conditions using measurement and basic calculation methods of vapour compression split systems whether used for refrigeration or air conditioning. These conditions include suction and discharge pressures, ambient, evaporator and condensing temperatures, evaporator, and condenser temperature difference.
- Recovering refrigerant from an existing split system including split single head air conditioning and hot water heat pump systems
- Pressure and leak testing a newly installed systems
- Evacuating newly installed systems in preparation for charging with refrigerant
- Charging newly installed systems with refrigerant

Generic terms used throughout this Vocational Standard shall be regarded as part of the Range Statement in which competency is demonstrated. The definition of these and other terms that apply are given in Volume 2, Part 2.1.

Unit Sector(s)

Not Applicable

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Competency Field

2.2) Literacy and numeracy skills

Participants are best equipped to achieve competency in this unit if they have reading, writing and numeracy skills indicated by the following scales. Description of each scale is given in Volume 2, Part 3 'Literacy and Numeracy'

Reading	3	Writing	3	Numeracy	3

Custom Content Section

Competency Field **5**)

Refrigeration and Air Conditioning

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